

# HANDBOOK OF THE BIRDS OF THE WORLD

## Volume 8 Broadbills *to* Tapaculos

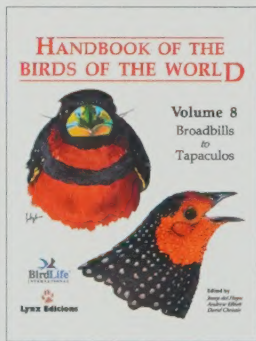
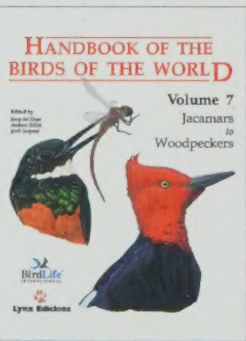
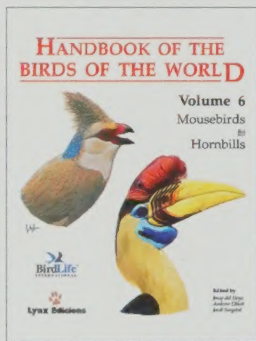
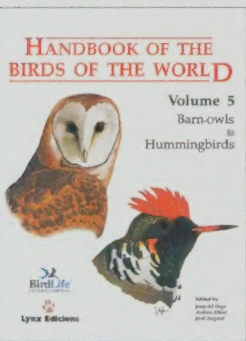
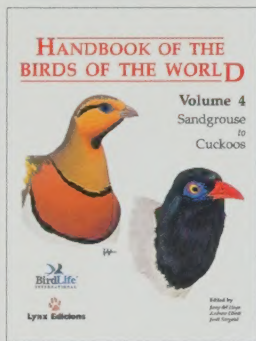
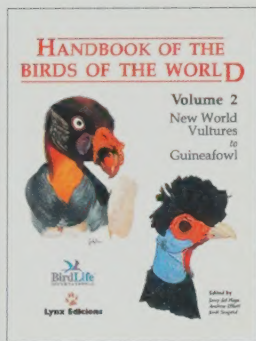
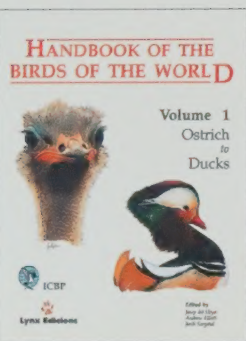


  
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*Josep del Hoyo*  
*Andrew Elliott*  
*David Christie*






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 Black-and-red Broadbill (*Cymbirhynchus macrorhynchos*)  
 Ocellated Tapaculo (*Acropternis orthonyx*)





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# HANDBOOK OF THE BIRDS OF THE WORLD

## Volume 8

Broadbills *to* Tapaculos



**Lynx Edicions**



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THE BIRDS OF THE  
HAWAIIAN ISLANDS  
PART I. THE BIRDS OF THE WORLD

By  
J. R. S. S. S.

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HAWAIIAN ISLANDS

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# HANDBOOK OF THE BIRDS OF THE WORLD

## Volume 8

Broadbills *to* Tapaculos

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## Foreword

### *A Brief History of Classifying Birds*

*"Everything that proceeds from the mind or the hands of man, is, in the universal sense of the term, artificial; for what is produced by the exertion of the human mental faculties, or the human corporeal organization, cannot be natural, cannot be, ipso facto, what exists in nature. But when nature is observed by man, and when man expresses in language or by visible signs, his conception of what he has thus observed in nature, the logical or predicative system, or assemblage of observed truths, so produced, is in the language of science, the natural system."*

William Swainson (1831)

The quest for a natural system to classify birds absorbed the interests of many writers over centuries before Swainson made this observation in a reply to criticisms of the Circular or Quinary System, a method of grouping five taxa at each level (order, family, genus, species) into circles. To show relationships, the larger or smaller circles touch or overlap with each other in various ways (O'Hara 1988). Swainson became a fanatical adherent of the scheme and promoted or defended it at every opportunity, and he was convinced that the long-sought goal of finding a "natural system" of classification of living things finally had been attained. Although applying it broadly in classifications, his main interest was ornithology and the reply in question was part of a review of a book on British birds whose editor/author had strong views on classifications, too (Rennie 1831; Swainson 1831). Swainson did not initiate the scheme but he seized its perceived potential so firmly that he soon fell out with its original proponent, an entomologist by the name of W. S. MacLeay, as well as with fellow supporters in ornithology. The year 1831 was in the middle of a period of active interest in the classification of birds, and philosophical writings on natural history were merging with anatomical and other investigations as never before (Barber 1980; Ritvo 1997). Within a few years the fallacies of Swainson's much-loved system had become apparent, forcing him out of the mainstream of ornithology. Nevertheless, variations lingered in Europe, where they competed with other schemes in attempts to resolve the same problem: how to classify birds.

To illustrate the historical progress of the classification of birds the Order Passeriformes is often highlighted. Recent studies have been very revealing in a group that has both perplexed and confused many earlier attempts to unravel their relationships. Collectively known as passerines (the song birds, or perching birds), they represent the most species-rich order of birds, containing nearly 60% of all bird species. They are conventionally divided into two main groups, the Suboscines and the Oscines, and their coverage in HBW begins with this volume. An important focus here is on the higher classification of birds, above the level of genus. The historical development of species concepts is another story (see Haffer 1997), although the two strands are obviously interconnected. The study of species underpins everything, but their grouping into higher categories – families, superfamilies, suborders, etc. – is problematical. The boundaries of bird groups were blurred or confused in the earliest works dating back to antiquity. By the late seventeenth century a workable classification of birds began to take shape, but the patterns we are familiar with today began to emerge only in the eighteenth century. However, these were also periods of increased activity and there was much competition and rivalry amongst the proponents of different classification methods and philosophies, a situation that would persist in one form or another for a good long time, as Swainson found in the 1830s.



After a brief account of the early history of birds and their classification, I have divided the remainder of this survey into three main sections. These represent three extended periods of activity dedicated towards working out the higher classification of birds (beta taxonomy, or macrosystematics: Storer 1971; Mayr & Ashlock 1991; Bock 1992). The first two ended in brief lulls when the goal of an acceptable classification was thought to have been achieved, before renewed investigations and reassessments, particularly using new techniques, started the process off all over again. I have called them “waves”, and today we are in the middle of the third wave. Although the periods defined for each wave may seem to be somewhat arbitrary, they are clearly marked by significant and influential publications on bird classification. The lulls between waves do not mean that nothing happened on the study of classification, but merely a temporary shift of focus when the goal of a working classification seemed to be a lesser priority. Of course, such complacency never lasted for long.

### *The beginnings of classifying birds: the search for a natural system*

Birds feature in the earliest records of human cultures. Modern species can be identified from prehistoric cave paintings; also on frescos, pottery, and the like, with some familiar images dating from Ancient Egypt (Houlihan 1996). In one way or another, the earliest cultures also classified the natural world around them. In surviving cultures that still follow traditional lifestyles, the results of anthropological research support the ancient evidence. For example, in New Guinea, classificatory systems matching the details obtained from modern taxonomic studies reveal the extent of the intimate knowledge of the local bird life within individual communities. Diamond (1966) examined results obtained from one village and found that of 120 bird species identified in the area, 110 had local names. While this meant that a few similar species shared the same name, others which can be difficult to identify in the field, such as scrubwrens (*Sericornis* spp.), were identified separately. On the other hand, species with distinctive males and females had separate names. Although many names were based on colour, calls or certain habits, others were said to have no meaning.

From what we know of the written records that have come down to us from classical antiquity, the various schools of natural philosophy shared a desire to understand and interpret the world around them. The earliest known works come from Ancient Greece, beginning with Anaximander (611-546 BC) of the school of Ionian philosophers; he described the results of his scientific researches in an influential poem, *περι φύσεως* (*On Nature*). Anaximander was a student of Thales of Miletus (c. 625-547 BC), the earliest philosopher whose writings are known today. However, none of what survives of Thales's work demonstrates the interest in biology shown by his pupil. Anaximander's students and disciples, and later others, continued to research and expand their views on the natural world.

The earliest known comprehensive study of birds dates from the writings of Aristotle (384-322 BC). He was a disciple of Plato (429-347 BC), who in turn had been a disciple of Socrates (c. 469-399 BC), demonstrating the succession of important philosophers who maintained and developed the ancient traditions, while also taking them in new directions. Tutor to Alexander the Great (356-323 BC), Aristotle spent several years travelling and living in various places before he settled in Athens. These travels provided him with opportunities to make observations that later found their way into his writings. In his *περι τῶν ζῴων ἱστορίαι* (*On the History of Animals*), he presented the results of his attempts to study all animal life known to him, supplying many details, notably about their external appearance, internal structure and habits. He also attempted the first classification of birds. He used two main systematic categories, the *genos*, a large group, and the *eidos*, the individual animal forms, roughly equivalent to the modern terms of order and species. The *genos* Ornithes was divided into five smaller groups: 1. Gamsonyches (birds of prey); 2. Steganopodes (swimming birds); 3. Peristeroides (pigeons and doves); 4. Apodes (swifts, swallows and martins); 5. all others not included in the four divisions. With the exception of the swallows and martins, all passerines were lumped together, along with forms such as woodpeckers. In spite of his detailed work, many of the 170 kinds of bird he listed remain unidentifiable.

Although Aristotle's works greatly influenced his successors and followers, later Greek philosophers moved away from studying nature in such detail. Eventually Aristotle's works were virtually forgotten and a focus on developing a workable classification system moved to the world of Ancient Rome where summarizing knowledge in an encyclopaedic form was well established. Gaius Plinius Segundus (AD 23-79), better known as Pliny the Elder, followed this trend and amassed everything he could into a series of 37 “books” collectively entitled *Historia Naturalis*. Birds were covered in the

tenth book, where he placed great importance on the structure of the feet as the basis of his arrangement, but his texts were a disorderly collection of information, with details from folklore, magic and superstition mingled amongst general information, including personal observations. Recipes and medical cures also featured in early works covering birds and, along with everything else, such details were repeated for centuries.

This compendium, generally unreliable from a zoological perspective, was very influential on the writings of the later Roman and early Christian times. In fact, for almost 1500 years, Pliny's encyclopaedia, in particular, was highly regarded and it was copied, extracted and adapted over the centuries. However, in other areas Pliny's work was only one of various sources used, and only when they could be reconciled with Christian morality. Around the year 370 Christian teachers, most probably based in Alexandria, sought religious significance in bird and animal stories to present allegories supporting the doctrines of the Scriptures. The resulting compilation from Greek, Egyptian and Jewish sources, marrying natural history with moral theology, was known as the *Physiologus*, and it was widely translated. In the meantime, other allegorical works appeared, which were collectively known as Bestiaries. With some updating from time to time, these were the sources for information on animals through the period known in Europe as the Dark Ages.

The philosophical differences between religious doctrine and scientific thought continued in the Eastern Roman Empire, where the Emperor Justinian I (483-565) decided in 529 to close all Greek schools in order to suppress competition with those of the Christian church. This movement against secular learning spread. In Spain, Isidore (570-636), Bishop of Seville preserved what he could from the censorship of ideas contrary to Christian teaching in an encyclopaedic work where classical learning could serve the needs of the students of the church. The result was *Etymologies sive origines*, or simply the *Etymologia*. Birds were treated in Chapter 7 of his Book XII on animals. For birds he established the term "aves" because birds travelled by pathless ways or roads (*viae*). Misinformation dominates the chapter, showing the deterioration of knowledge of the natural world after several centuries.

Aristotle had not been completely forgotten, and Boetius (480-524), a keen collector of Greek documents, was the first to translate some of his writings into Latin, but this had little influence. Scholars in Syria, beginning with Porphyry (233-c. 304), had also extensively translated and commented on his works, and by the period 800-1100, most of Aristotle's works had been translated into Arabic. The Arab scholars were mainly based in Baghdad, where Greek science and philosophy were widely studied. The two best known translators around this time, who also put their own interpretations on his works, were Avicenna (980-1037) and, particularly, Averroes (1126-1198), who lived in Spain, then occupied by Moslems, after their invasion in the eighth century.

The Aristotle that became influential in European universities of the time owed much to the philosophical views of Averroes. Around 1230 the polyglot scholar Michael Scot (1175-1232) travelled to Spain, where he could read Aristotle in the original Arabic of both Averroes and Avicenna. He subsequently translated Averroes's work into Latin. Frederick II of Hohenstaufen (1194-1250) was keenly interested in birds and invited Scot to his court to share his knowledge of Aristotle. Frederick found Aristotle's *Historia Animalium* to be inadequate when compared to his own knowledge of birds, which he put in a book, *De arte venandi cum avibus*. It was much more than just a book on hunting with birds, as it also included a classification of birds based on ecology and diet. This enlightened work was well ahead of its time. However, it was ignored by the ecclesiastical naturalists of the period because of Frederick's excommunication by the Pope. Although a version was eventually printed as late as in 1596, its value to ornithology only began to be appreciated in 1788. A complete version, based on all available sources, finally appeared only 60 years ago (Wood & Fyfe 1943).

The re-emergence of Aristotle continued when two Dominicans rediscovered his work and wrote commentaries. Albert von Bollstädt (1193-1280), better known as Albertus Magnus, a teacher of theology, used Scot's translation and later wrote commentaries on it in *De Animalibus*, between 1260 and 1270 (first printed in 1478). His disciple, Thomas de Cantimpré (c. 1210-1293) had already done this in *De Natura Rerum*, between 1233 and 1248. A century later, *De Natura Rerum* gained wider circulation when selected parts of it were translated into German by Conrad von Meigenberg (c. 1309-1374) as *Das Buch der Natur*, first published, with wood cuts, in 1475. These works originated as attempts to separate philosophy and theology in understanding the natural world, but they still carried much misinformation. Times were slowly changing, however, and even Albertus and later scholars of the period, notably William of Occam (1270-1347), were able to reconcile natural and church philosophies so that Aristotle could stand as a representation of the views of the church.



The spread of what became known as the Renaissance movement began in the fifteenth century, through the effects of several major events. Those of significance to the classification of birds included: the exile of Greek scholars in Europe, from as early as about 1430 but particularly after the fall of Constantinople in 1453; the invention of printing; and, later, the discovery of the New World. One Greek scholar, Theodorus Gaza, brought Aristotle's works with him and as early as 1476 published in Latin the *Libri de Animalibus*, with a Greek edition appearing in 1495. Printing made books widely available, with the ancient texts and knowledge reaching a much broader readership. The beginnings of extensive global exploration provided new insights for understanding the diversity of the natural world.

It was at this point in history that the man later called the Father of Ornithology appeared. William Turner (c. 1500-1568) was a widely travelled naturalist both in his native England and in Europe, often not by choice but because of religious differences. He turned his interest in philology to classical natural history and sought to make an accurate interpretation of the names in the works of Aristotle and Pliny, publishing his results in his little book *Avium præcipuarum, quarum apud Plinium et Aristotelem mentio est, brevis et succincta historia* (1544). He also included many of his own extensive observations, making it the first bird book treated in a scientific spirit. In his lifetime, he published 31 books on plants and animals, all praised for their accuracy, and indeed he is also known as the Father of English Botany (Mullens 1908a). Turner concluded his studies by hoping that a new Aristotle would emerge to revise and update what was known about natural history. He did not have long to wait.

Conrad Gesner (1516-1565), based in Switzerland, was a great assembler and organizer of information. He was assisted in his work by several correspondents, including Turner, whose work he greatly admired. Birds were covered in the third volume of his *Historia Animalium* (1555), popularized by reprintings, in Germany in particular, for over a century. In this work he discussed and illustrated 217 different birds, including those of mythology, even though he did not believe they existed, but because he thought it would be of interest to the public. Gesner's work has been credited as representing the starting point of modern zoology. His earlier bibliographical studies have given him the name of the Father of Bibliography, and he also wrote an account of 130 known languages, with the Lord's Prayer given in 22 of them. He was also perhaps the first person to collect natural history objects and house them in a museum. As classification was poorly understood, he decided to present his encyclopaedic coverage of birds alphabetically. He died when plague ravaged his home city of Zurich.

Pierre Belon (1517-1564) travelled widely in Greece, Asia Minor, Egypt and Arabia, and wrote a popular account of his travels, including natural history (1553). He lived in various parts of Europe, as he was dependent on patronage. All these travels allowed him to embellish his reworking of the old authors in *L'histoire de la nature des oyseaux, avec leurs descriptions, et naïfs portraits, retirez du naturel* (1555). Although his work was generally ignored in his day due to the dominance of Gesner's publications - indeed he had been accused of plagiarism, even though his book appeared in the same year - it was well regarded by later writers. His classification was derived from Aristotle and Pliny. Like them, he separated birds on ecological and morphological principles into raptors, waterfowl with webfeet, fissiped marsh birds (including kingfishers and bee-eaters), terrestrial birds, large arboreal birds and small arboreal birds (including swallows). His book was also important for his attempts to understand anatomy, including a comparison of a human and a bird skeleton. In addition to his work on birds, Belon wrote on fish, and he was a keen botanist, with an interest in establishing exotic plant species in France, to which end he helped establish two botanical gardens. He was working on a book on plants when he was murdered one night while walking to his home in Paris.

Ulisse Aldrovandi (1522-1605) had contributed to Gesner's work but wanted to outdo him, and produced his encyclopaedic *Ornithologia* (1599-1603) in three volumes. In his youth he had been imprisoned as a heretic, as indeed for various reasons had Gesner, Belon and Coiter; in later life Aldrovandi taught botany. His first book was a treatise on drugs, which was to be of great use to later works on pharmacy, but ornithology was his main interest. The compilation, begun in the 1560s, was the most comprehensive of its kind up to that time. He criticized Gesner for using an alphabetical arrangement, and proceeded to follow a classification based on Aristotle. Birds were grouped by having a hard and powerful beak (raptors, parrots, ravens, woodpeckers, treecreepers, bee-eaters and crossbills); those that bathe only in dust or in dust and water (pigeons and buntings); songbirds (finches, larks and canaries); waterfowl; and shorebirds. As he put everything he could find into his work, including plagiarizing Gesner and Belon, its real value was sometimes considered to belong in the earlier works of those authors. He was also criticized for including few of his own



observations. However his work was judged, it was popular in its day and was continued for other animal groups after his death in his native Bologna, Italy, by several of his faithful students.

Volcher Coiter (1534-1576), born in the Netherlands but spending his working life in Italy and Germany, was the first person to base a classification of birds on structure instead of function. He devised a natural system following the guidelines of Aristotle and Pliny, based on morphology, in *De avium sceletis et præcipuis musculis* (1575). The section of this work entitled *De differentiis avium* contained the first diagram showing the relationships of birds. It also summarized his knowledge of the anatomy of birds in an interpretive way, resembling a key, or perhaps something approaching a cladogram (see Allen 1951a, 1951b). Although like Pliny he used form (i.e. morphology) with divisions based on the characters of the feet, his observations in the text demonstrate their relationships to function. His subdivisions followed the shape of the claw and the placement of the toes. No matter how it is viewed, his tabulation represents the beginnings of an attempt to derive a natural classification of birds based on morphology. In this way he anticipated the ideal “natural system” envisaged nearly 200 years later by Linnaeus – who had been influenced by the better-known attempt at a morphological classification a century later by Willughby and Ray.

Caspar Schwenckfeld (1563-1609), in Germany, was a follower of Aristotle and the works of Gesner and Aldrovandi, and made useful observations on the biology of birds. He is the author of the first regional bird list, in *Aviarium Silesiæ*, the fourth volume of his *Theriotropeum Silesiæ* (1603). He provided useful details of about 150 species found in his district, making a valuable early contribution to ornithology. He tried to classify birds according to their habitat, mobility, foot structure, food and colour, but finding these criteria unsatisfactory, he followed Gesner’s alphabetical arrangement. His inclusion of unreliable material from Gesner and Aldrovandi with his original observations represented a trend continued by some later writers.

John Jonston (or Johnstone), also Johannes Johnstonus (1603-1675), a Pole of Scottish descent, produced a compilation on birds from Aldrovandi and other earlier writers, but with nothing original, in his *Historiæ naturalis de avibus* (1650). Its value was in its illustrations, mostly reworking those of Gesner and Aldrovandi but also adding some new ones. It became popular and was widely distributed, translated, printed and used for over a century, last appearing in 1773. Arguably one of the least reliable or original books of the first flowering of modern ornithology became the most popular.

Christopher Merrett (1614-1695) provided the first printed list of British birds, *Aves Britannicæ*, in his *Pinax rerum naturalium Britannicarum* (1666, reprinted in 1667 because most copies were destroyed in the Great Fire of London). This was later considered by some to be a poor work by an author with little field experience. In classifying the birds, he mostly based his identifications on Aldrovandi and Jonston. Mullens (1908c) reviewed the list of 165 birds, demonstrating Merrett’s attempt to link his identifications with earlier works rather than using his own observations. Even at this late date the bat was still listed amongst birds! Around this time and later in Britain a number of local and county natural histories also appeared. Although such compilations had an earlier history dating back in printed form to at least 1486, their coverage of birds was incidental before Merrett compiled his list (Mullens 1908d). The only one that sought to provide some detail was that of Richard Carew (1555-1620) in his *The Survey of Cornwall* of 1602 (Mullens 1908b).

Walter Charleton (1619-1707), in his *Onomasticon zoicon* (1668, revised 1671), sought to provide a systematic classification of all birds. For familiar birds, he based it on Aldrovandi, with two main divisions, of waterbirds and landbirds. Waterbirds were further divided into palmipeds, fissipeds (fish-eaters and insect-eaters) and plant-eaters. Landbirds were further divided into meat-eaters (including bats!), seed-eaters (dust-bathing, dust- and water-bathing, and singing), berry-eaters, and insect-eaters (non-singing and singing). Passerines, like other groups, are scattered amongst these divisions, though mostly in the landbirds. When Charleton had to consider unfamiliar, exotic birds he put them in an appendix under either “Terrestres” or “Aquaticæ”. This was the last serious attempt to classify birds following Aristotelian principles. A new system was needed and it was soon to appear.

Francis Willughby (1635-1672) and John Ray (1627-1705), both English clergymen, met at Cambridge, where they developed a plan to record and describe all animals and plants according to their own natural philosophy of the world. Willughby worked most intensively on birds and insects, as well as other animals, and Ray principally on plants. They travelled widely together in Britain and Europe, collecting and recording all they could find. Willughby’s early death from pleurisy left his works unfinished, but he had made financial arrangements for Ray in his will, allowing Ray to edit and publish them (Raven 1942). The Latin *Ornithologiae* appeared in 1676,

followed by a revised edition in English, *The Ornithology of Francis Willughby*, in 1678. Although the amount of Ray's contribution to this work has been disputed, the final results obviously benefited from their close collaboration (Mullens 1909b). However the issue is interpreted, this important book founded the beginnings of scientific ornithology. It not only summarized material from older works, with an attempt to separate fact from fiction, but also included much new information; although the main focus was on descriptions of plumage and structure, some details of habits were added. To present this summary of ornithology, a strictly morphological classification was devised, based on beak form, foot structure, and body size. The triumph of form over function, already seen in the then little known work of Coiter, finally replaced the confusion of earlier attempts at creating a natural system of birds. The groupings of species began to resemble bird families recognized today. For example, amongst the passerines, finches, thrushes and crows were placed together.

Ray prepared a new summary of birds in the 1690s but it was still unpublished at the time of his death. As before, new information from the results of recent voyages and travels was added. Two notable collections used were those of Sir Hans Sloane (1660-1753) from Jamaica (1687-1689) and of Paul Hermann (1640-1695) from India and Ceylon (1672-1680). After Ray's death, the manuscript was revised by his friend William Derham (1657-1735), who expanded Ray's coverage of exotic birds by appending a manuscript on the birds of Madras, *Avium Maderaspatanarum*, the first regional list of Indian birds, which had been passed on to him by James Petiver (1663-1718). At the time, Petiver maintained one of the earliest natural history collections in England and corresponded with potential collectors for both illustrations and specimens of plants and animals. One was Georg Joseph Camel (1661-1706), a Jesuit based in Manila, whose interest in birds resulted in his *Observations de Avibus Philippensibus* (1703), the earliest regional paper on Asian birds. The Madras list, from an Edward Buckley, was also incorporated by Derham into Ray's glossary of foreign bird names and is notable for passerines as the source of the name "pitta", a local name for "bird", but subsequently associated with the members of the family Pittidae. This revised summary of *The Ornithology* appeared in the *Synopsis Methodica Avium & Piscium* (1713). The original folio of just over 300 pages had been reduced to an octavo, but with additions it still extended to 200 pages. While the natural system of Willughby and Ray was not received favourably by all at the time, it was the most comprehensive and complete of its kind then and for at least another 50 years. It also became an important influence on Linnaeus when he applied his natural system to birds; indeed, he did not improve on it overall.

Johann Ferdinand Adam von Perna (1660-1731) was interested in the comparative behaviour of birds. He had been influenced by the studies of Schwenkfeld in devising a classification system of birds based on behaviour, but he recognized more categories, and he confined the results of his ideas to his own observations. While he may not have had much success with classification from a systematic perspective, his research produced other valuable results such as the discovery of territory in birds, instinctive behaviour, such as feeding at the nest and why birds migrate, and remarks on the role and meaning of bird song. He elaborated his ideas in his *Unterricht, Was mit dem lieblichen Geschöpf, denen Vögeln, auch ausser dem Fang, nur durch Ergründung deren Eigenschaften und Zahmmachung oder anderer Abrichtung man sich vor Lust und Zeitvertreib machen könne* (1707, revised 1716, supplement 1720). However, interest in bird behaviour as opposed to systematics, i.e. popular vs scientific ornithology, diverged for about 200 years before the importance of the interrelationships of these aspects of ornithological study was fully appreciated (Fisher 1954; Davis 1994).

Carl Linnaeus (1707-1778), or von Linné from 1761, disappointed his family by refusing to join the clergy, and he eventually studied medicine in Uppsala, Sweden, but with a great interest in botany. In 1735, after adventurous travels in Lapland, he went to the Netherlands to further his studies. He was already interested in devising a new system of classification and soon found inspiration from the many natural-history collections he saw there. He also inspired interest in his system, with its sequence of Classis, Ordo, Genus, Species and Varietas, and was sponsored for the publication of the first edition of his *Systema Naturae* (1735), then only consisting of several large sheets. His hierarchical concept of categories of relationship was the real improvement on Willughby and Ray, who had used Genus in the sense of Aristotle so that it was interchangeable with the refined Linnaean categories from Class to Genus. Over the next 20 years, inspired by the work of friends and the fame generated by the appearance of his simple but useful method, he developed and refined his natural system. By the sixth edition of *Systema Naturae* (1748), the diagnoses of genera and species were much improved. The real inspiration of Linnaeus was developing a simple but workable system, and this was its great appeal. For birds he recognized six orders, using the



beak and foot as points of reference: 1. Accipitres (birds of prey, owls, parrots); 2. Picae (woodpeckers, hornbills, cuckoos, hoopoes, and also crows and crow-like birds); 3. Anseres (swimming birds); 4. Scolopaces (fissiped waterfowl); 5. Gallinae (ratites, pheasants, bustards and coots); 6. Passeres (all other passerines, but also pigeons, hummingbirds, etc.). The old division of landbirds and waterbirds was gone. The system as we know it today was finally published in the 1750s.

To some naturalists and zoologists in the mid-eighteenth century the attraction of the Linnaean system was not so much his classification as his strict methodology, which could be varied and played with. Also at this time, several large works illustrating birds in colour but in no particular system became popular. Prominent amongst these were the *Natural History of Carolina, Florida and the Bahama Islands* (1731-1743) by Mark Catesby (1682-1749), the first major work on North American birds, and *A Natural History of Birds* (1743-1751) by George Edwards (1694-1773), both authors enjoying the patronage of Sir Hans Sloane (Feduccia 1985; Mason 1992; McBurney 1997). Pierre Barrère (1690-1755) combined these developments by offering a confusing system in his *Ornithologiae specimen novum...in classes, genera et species, nova methoda, digesta* (1745). His approach, mixing large and small birds, worked well as a method for fitting different-sized birds into cabinets! Others, like Barrère, using Linnaeus as the point of reference, could produce different results, such as the *Historia avium prodromus* by Jacob Theodor Klein (1685-1759) in 1750, and *Avium genera* by Paul Heinrich Gerhard Möhring (1710-1792) in 1752, but these publications did not detract from the progress of Linnaeus. Also, collections were increasing in importance (Mearns & Mearns 1998), most famously that of Sir Hans Sloane, willed to the nation on his death in 1753 and forming the genesis of the British Museum, first opened in 1759 (Stearn 1981; MacGregor 1994). The search for a natural system was gaining pace and seemed to be in sight at last.

### *The first wave: philosophy and typology (1758-1850)*

The natural system of Linnaeus, as we know it today, dates from the tenth edition of his *Systema Naturae* (1758), published when Linnaeus was at the height of his powers. The tenth edition is also the starting point for zoological nomenclature, when the binomial (or binominal) method, a single name each for genus and species, was first consistently applied to all animal groups, although universal acceptance was not to come till over a century later, after much controversy and debate. Linnaeus's inspiration for using only two names came to him when he was preparing an index. He had first tried the method for several animal groups, including birds, in his *Museum Adolphi Friderici Regis* in 1754, after successfully applying it to plants in his *Species Plantarum* in 1753 (eventually the official commencement date for botanical nomenclature). Linnaeus still retained six orders for birds, but by the tenth edition he had rearranged some of the genera within them, such as moving parrots and hummingbirds to Picae, and ratites and bustards to Grallae (formerly Scolopaces). Although Linnaeus's manic depressive personality became increasingly pathological in his later years, he maintained a high opinion of his achievements, reinforced by the responses to his works. He considered his *Species Plantarum* "the greatest in the realm of science" and his *Systema Naturae* as a "masterpiece that can never be read and admired enough", and he even published anonymous reviews of his own works (Goerke 1973). Linnaeus also saw his system as the greatest representation of nature as God's creation, but he could also react against his work by feeling that hate and envy were his rewards (Lindroth 1994). The first to spread the new wave of the natural system of "God's registrar" were his students, starting as early as 1745; all were sent with orders and instructions, and they were designated by Linnaeus as his "Apostles" (Koerner 1999). Some produced important works, while others perished in remote corners of the globe. The most famous student was Daniel Solander (1733-1782), who was one of the naturalists on the first great voyage of exploration by Captain James Cook (1728-1779) in 1768-1771 (Duyker 1998); this was also the first important expedition for natural history. Linnaeus is best known today for his botanical works (the "Prince of Botanists"), as his deficiencies in zoology are apparent, but his real legacy is the workable and adaptable system of binomial nomenclature still used today.

The ripples of the new wave of classification using the binomial system soon spread out from Sweden. For birds it was adopted as early as 1763 by Erik Pontoppidan (1698-1764), in an appendix of his *Dansk Atlas*; in 1764 by Morten Thrane Brännich (1737-1827) in his *Ornithologia Borealis*; also in 1764 by Peter Simon Pallas (1741-1811) in his *Adumbratiunculae* to A. Vroeg's *Catalogue raisonné*; and others such as Johann Reinhold Forster (1729-1798) from 1767, and both Thomas Pennant (1726-1798) and Giovanni Antonio Scopoli (1723-1788) from 1769. Marmaduke Tunstall



(1743-1790) was the first to apply Linnaean names to British birds in his *Ornithologia Britannica* (1771), but he kept Willughby and Ray's division of land- and waterbirds. The acceptance of the system in Germany was popularized by Philipp Ludwig Statius Muller (1725-1776) in a German edition of Linnaeus's *Systema Naturae* appearing from 1773, including a supplement in 1776. This supplement contained the first large application of binomial nomenclature to species known but not yet incorporated into the Linnaean system. Mathews (1925) pointed out that "Sharpe suggested he was colour blind", no doubt due to a number of unidentifiable birds named. However, he may not be entirely to blame, as he merely translated his descriptions of new species into German from a 1772 Dutch abridgement of Linnaeus by Pieter Boddaert (1730-1796), who only gave Dutch names to those birds additional to Linnaeus (Cassin 1864). As Cassin demonstrated, one needed to consult Boddaert for the exact source of names from Buffon, as Statius Muller simply stated "Buffon", if based on that work (see below).

Mathurin Jacques Brisson (1723-1806) was the curator of the large French private museum of natural-history objects, including not only bird specimens but also nests and eggs, belonging to René Antoine Ferchauld de Réaumur (1683-1757), who published important works on insects. In working out the arrangement of this diverse collection, Brisson sought to adapt Linnaeus's system, which he first applied to mammals in 1756, but its simplified approach made him all too aware of its deficiencies in characterizing groups and species. In 1760 he published his *Ornithologie* in such detail that it filled six volumes and 4000 pages. It was a comprehensive summary of all known species, based not only on previous sources and de Réaumur's extensive holdings, but also on material studied in several other private collections in France. Much of interest was offered by de Réaumur's correspondents, notably Pierre Poivre (1719-1786), who also sent some specimens to other private French collectors. He collected in India, South-east Asia and Madagascar during clandestine missions to smuggle spice plants from the Dutch East Indies to Mauritius in 1751-1756, in spite of losing his right arm in 1745 during an earlier voyage to South-east Asia (Stresemann 1952; Ly-Tio-Fane 1994). Of some 1500 species described, Brisson was able to add 320 determined as new from the specimens examined. Brisson, influenced by de Réaumur, could not reconcile his classification with the brief, but broader definitions of Linnaeus and increased the number of orders from 6 to 26, with subdivisions where required, and defined a large number of new genera. He kept his key characters simple, particularly the beak and claw, to minimize errors. With care and attention to detail he made few mistakes and provided a classification nearer to modern ones than anything in the following 80 years.

For all his attention to detail, Brisson did not adopt the binomial nomenclature system of Linnaeus's tenth edition but instead had been using the sixth edition. By the time he could use the tenth edition, four volumes of his work had already been printed and, although he was able to indicate his awareness of the tenth edition in the last part of the work, it was too late. He was not a strict follower of other systems, but instead created his own elaborate classification of birds, which was criticized and was not followed, because, unlike that of Linnaeus, it was hard to learn. While he delineated his higher categories and species descriptively, he used a single term for his well-defined genera. These were eventually recognized and accepted after much doubt and debate not only about the problem of the non-binomial nature of Brisson's work but over the exact number of genera that could be used (Allen 1910; Bock 1994). Meanwhile, de Réaumur had willed his collection to the *Académie Royal des Sciences*, in order to keep it out of the hands of his great rival, the Comte de Buffon. Nevertheless, by 1760, Buffon's influence was such that he ensured de Réaumur's collection made a valuable addition to the *Cabinet du Roi*, of which Buffon was in charge; in truth, this transfer made sense because the *Académie* did not have the facilities to manage such a large collection. As a result, Brisson was out of a job and soon left ornithology after such a brilliant debut (Farber 1982), later becoming a teacher of physics. Linnaeus subsequently incorporated Brisson's new species into his system, in his twelfth edition (1766).

George-Louis Leclerc (1707-1788), Comte de Buffon from 1772, became the leading natural historian in France in the second half of the eighteenth century. He began his rise in scientific circles, as was typical of the day, by currying favour over potential rivals, in this case, by assisting with a blackmail scheme against the ex-husband of a duke's wife. Later, in 1749, he began his great work, the *Histoire naturelle, générale et particulière*, reaching 36 volumes by his death in 1788, though the series eventually finished with 44 in 1804. These included the nine volumes (Vols 16-24) of his *Histoire naturelle des oiseaux*, which appeared from 1770 to 1783. They were supplemented by 973 of the 1008 coloured plates of what became known as the *Planches enluminées*, issued from 1765 to 1783 in 42 parts and two sizes (Heilbrun 1952) and which gained

great popularity. Buffon had been director of the *Cabinet du Roi* since 1739 and his great work, with some of the text and all of the plates contributed by members of his staff, was originally intended to provide a catalogue to the collection. Although the collection was small when he began, he had a very different philosophical approach to his subject. He opposed the nomenclatural systems as exemplified by Linnaeus. Instead, he saw the task ahead as surveying the great relationships of nature, beginning with the development of the earth and all life but not hindered in his interpretations by the hand of God and traditional doctrines, i.e. the fixity of species (typological species concept). In seeking other explanations, including hints of evolutionary ideas mixed with Aristotelian theory, his writings may have seemed impressive but their superficiality was apparent to many who read his explanations. His attempts to interpret the influence of time, climate and diet on species required groupings of clearly unrelated species around the world, which then had to be climatic varieties. Pierre Sonnerat (1748-1814) was an early critic who in 1776 observed that he could not reconcile Buffon's ideas to what he had seen on islands in the Philippines. On the other hand, the Italian Jesuit, Giovanni Ignazio Molina (1740-1829), in his *Saggio sulla storia naturale del Chili* (1782), followed Buffon's ideas by considering many birds in Chile as varieties of European species.

Buffon, with his holistic approach to an understanding of nature, placed great importance on an understanding of the habits of animals in the wild; he was labelled as the "French Pliny" by some later workers. He developed a network of correspondents, bestowing them with honorific titles, and reaping the benefits for his collection and volumes. As he ordered his system from the most to the least interesting of animals to man he used this approach in organizing the classification of mammals and continued with this method for birds. By the time he was planning his volumes on birds in the 1760s the de Réaumur collection arrived at the right time to supplement the meagre holdings of the *Cabinet du Roi*. Several correspondents of de Réaumur now supplied material to Buffon and enhanced his existing, extensive network. Others were encouraged to go out and gather information from exotic locations, fulfilling a role similar to Linnaeus's "Apostles". For example, Charles-Nicolas Sigisbert Sonnini de Manoncourt (1751-1812) based himself in Cayenne and sent a large collection with notes. The Scottish explorer James Bruce (1730-1794), also supported by Buffon, was eager to share his findings from his Ethiopian adventures when passing through Paris in 1773 (Bredin 2000).

Even his critic, Sonnerat, supplied him with material from his Asian travels, beginning in 1771-1772 when Sonnerat's godfather, Pierre Poivre, sent him to New Guinea, as part of a new secret mission for spice plants. In spite of his own useful records on birds he could not resist adding others from elsewhere to enhance the value of his work. Amongst such embellishments were specimens and drawings from the naturalists on Cook's first voyage, obtained when he met them in Cape Town in 1771, and others from Philibert Commerson (1727-1773), the naturalist who accompanied the circumnavigation of the globe by Louis Antoine de Bougainville (1729-1811) in 1766-1769 and later remained on Mauritius. This material included three penguins, which Sonnerat claimed to have seen in New Guinea waters, whence the Gentoo Penguin is named *Pygoscelis papua*. The most famous addition, however, was the Australian Laughing Kookaburra, thus named *Dacelo novaeguineae*, although never recorded from New Guinea (Ly-Tio-Fane 1976). The great popularity of Buffon's works led to numerous editions and translations, stimulating an appreciation of nature in many quarters, notably in Italy. He wrote for the dilettante and was enamoured of his own style (over substance), although this was to some extent understandable: the available material was limited, so he felt he had to pad out his writings with speculations on the significance of as much as he could highlight. He had some interesting ideas but these were not greatly developed and were mixed with misinformation. All things considered, he was doing what he could with what was on hand and, as he was trying to cover everything, the criticism of superficiality is understandable (Roger *et al.* 1997). On its own merits, Buffon's work on birds may have contained more deficiencies than Brisson's, but, as noted in an earlier period, the best work is not necessarily the most popular. Although Buffon's ideas on classification continued to survive, they were increasingly overshadowed by Linnaeus's natural system. When later Linnaean authors named birds based on Buffon's work, the focus was on the plates rather than the text, although the information in the relevant text was acknowledged. Therein lies the lasting value of Buffon, as the plates are the types for a large number of bird names.

Thomas Pennant, a prominent English naturalist, was well known for *The British Zoology* (1761-1766, and later editions). He was familiar with the work of Linnaeus but preferred to use English names and, as in his *Genera of Birds* (1773), he was a follower of Willughby and Ray (Mullens 1909a). He was also a friend and corre-



spondent of Linnaeus and had experimented with Linnaean names as early as 1769 in the *Indian Zoology*, using selected paintings brought to England in 1759 by Joan Gideon Loten (1710-1789), a former Dutch governor of Ceylon (Allen 1908). However, after a single part of 12 plates and text was issued, Pennant lost interest and passed the material to Forster who produced a German version with names after Linnaeus in 1781. After his *Arctic Zoology* (1784-1787), Pennant revised the Indian work, based on Forster, with Linnaean names, in 1790. Forster then revised his own edition again in 1795 (Hoare 1976). Pennant's inclination and influence was to keep an interest in England in the classification system of Willughby and Ray, but the influence of Forster, in particular, led him to combine it with the classification of Linnaeus. This mix of systems could not continue for long.

John Latham (1740-1837) dominated ornithology in England for 50 years. With access to museum collections and other resources, he first attempted a summary of all the birds of the world in *A General Synopsis of Birds* (1781-1785), including much new material recently arrived from voyages, notably those of Captain Cook. In this, he retained the basic classification system of Willughby and Ray and used English names (Allen 1951a). As with the influence of Buffon in France, the English were not yet completely ready to accept the new methodology. Like Pennant, Latham also dabbled with Linnaeus. In a tabular list of British birds, added in the first supplement to his *Synopsis* in 1787, he listed names in the Linnaean system. Latham's reluctance to embrace the Linnaean system fully had its consequences. Linnaeus himself set the precedent when he claimed the new species of Brisson in 1766, a trend duly followed by Statius Muller in 1776, using mostly Buffon. In the 1780s the pace increased, first with Forster in 1781 in his list of Asian birds appended to his revision of Pennant's *Indian Zoology*. In 1783 Boddaert latinized the names in an index of Buffon's plates, but his delay in applying the Linnaean system to the new species meant that Statius Muller took the credit for those covered in his earlier work of 1772. In 1786 Scopoli did the same for the birds listed only by French names in Sonnerat's two voyage reports, but he found it difficult to make them all fit in and this led to some odd combinations, such as a quail named in the genus for orioles. Lastly, Johann Friedrich Gmelin (1748-1804), an "industrious but indiscriminate and incompetent compiler", according to Coues (1880), pulled it all together in his so-called thirteenth edition, actually the fourteenth if associated with Linnaeus (Iredale 1958), of *Systema Naturae* (1788-89), augmented by the many new species from Latham's volumes.

Realizing what was happening, Latham tried to make up for lost time with his own Latin summary of his work in 1790 with his *Index Ornithologicus*, delayed to include new discoveries, most notably the Emu (*Dromaius novaehollandiae*), from the new colony in Australia. Latham enjoyed access to the earliest discoveries coming from Australia, but the next batch to arrive went to his rival at the British Museum, George Shaw (1751-1813). While in his *Index* he reluctantly had to acknowledge Gmelin's names, he did not accept them all, but the names used today that date from the *Index* are for the additions since his *Synopsis* was published. A decade later, particularly with all the new material arriving from Australia, Latham could once more outdo his rival so he decided to update his work with a second supplement, in English and Latin editions. This time the Latin edition appeared first, in 1801, but the English edition apparently was delayed until 1802 (Browning & Monroe 1991), with the remarkable Superb Lyrebird (*Menura novaehollandiae*) arriving just in time. Latham had apparently learned his lesson. From the 1790s Linnaeus's system was widely used in England, although the Willughby and Ray division of land- and waterbirds lingered. In his 80s Latham again attempted to summarize all known birds, an increasingly difficult task, in his *A General History of Birds* (1821-1828), but the revision of the Latin *Index* was still unfinished when he died at 96 in 1837 (Mathews 1931). It was the last vestige of the Willughby and Ray system. Latham's reversion to his old methods once more allowed new species to be latinized by others, and this time it was James Francis Stephens (1792-1852) in the later volumes continuing his late rival Shaw's *General Zoology* (1816-1826), who claimed a large share of them.

The death of Buffon in 1788 encouraged the emergence of followers of Linnaeus in France (Spary 2000). Within a year the botanist René Louiche Desfontaines (1750-1833) had taken the first steps by naming several new species collected on his travels in the Barbary States (Algeria). The Abbé Joseph Pierre Bonnaterre (1747-1804) began the *Tableau encyclopédique et méthodique: Ornithologie* in 1790 but with the disruption of the French Revolution this work was not completed until the 1820s (by Vieillot). The great comparative anatomist Baron Georges Leopold Chretien Frederic Dagobert Cuvier (1769-1832) followed Linnaeus in his conservative classifications, beginning in 1798, but birds were not of any particular interest to him. In 1799 Bernard Germain Étienne de la Ville-sur-Ilлон, le Comte de Lacépède (1756-1825), using the beak-foot approach, changed the 6 orders and 81 genera of Linnaeus to 10 "divi-



sions", 51 "orders" and 130 genera. However, this system had no lasting influence, as it created the same types of anomalies as found in works before Willughby and Ray. François Marie Daudin (1776-1804), in his *Traité élémentaire et complet d'ornithologie, ou histoire naturelle des oiseaux* (1800), attempted to provide a complete handbook of ornithology. He provided a Linnaean framework and combined it with the best ideas of Buffon in seeking to understand the whole bird, with much useful information on anatomy and behaviour incorporated, including indications of possible new directions of research, especially in behaviour.

In Germany, Pallas, famous for his Russian explorations supported by Catherine the Great (1729-1796), had already tried to create a synthesis of the Linnaean and Buffonian schools in his later work, particularly in his major faunal study of Russia (1811-1814). Johannes Hermann (1738-1800) in his *Tabula affinitatum animalium* (1783) introduced to birds the concept of showing the relationships of genera by their degree of affinities, expressing the results by linking them in horizontal or vertical rows. Hermann's work had little influence, although followed for a time by Johann Friedrich von Brandt (1802-1879), working in Russia. Blasius Merrem (1761-1824) planned to develop a true natural classification of birds by studying their internal and external characters, as well as their entire life histories. In 1788 he only got as far as introducing and demonstrating his ideas in his *Versuch eines Grundrisses zur allgemeinen Geschichte und natürlichen Eintheilung der Vögel*. Later, he was able to apply some of his ideas to a classification in his *Tentamen Systematis naturalis Avium* (1816). However, in 1788 Germany was not yet ready for such new methods. There were other, philosophical influences, as well as another rise in the popularity of well-illustrated books. In Germany and England, for example, this meant multi-volume works on local birds, but in the France of Napoleon, attention turned to colourful, exotic birds. This time there were attempts at systematically arranging birds for their presentation.

François Levaillant, or le Vaillant (1753-1824) was the most famous ornithologist at the turn of the nineteenth century, commencing three large, illustrated works simultaneously in 1801, including the first major monograph on any bird family, the parrots (Bruce 1991). His fame rested on explorations in southern Africa, culminating in an incomplete *Histoire naturelle des oiseaux d'Afrique* (1796-1813), the first comprehensive regional work on birds outside Europe. In spite of the many excellent observations provided in this work and his two travel books, they were marred by the inclusion of species recorded by Levaillant but later shown to be either not southern African, artefacts (faked, composite specimens), or completely fictitious (Sundevall 1857). This was blamed on his use of other writers or editors to embellish the text: apparently his father edited the first book and the second was entrusted to Casimir Varon, a man of letters, who "permitted himself greater liberties... than Vaillant Sr had done" (Bokhorst 1973). Although branded a liar by later workers in South Africa, it was not unusual at the time for an author to take advantage of what was available to enhance his work, as noted above for Sonnerat. In Levaillant's case, based on his own work and the opinions of others, he was "a vainglorious man who considered he had been unjustly neglected by the learned world of his day" (Winterbottom 1973). The classification used in his works was modelled on Buffon's methods as Levaillant despised the Linnaean system. He thus offered the last great field of bird names to be harvested by followers of Linnaeus, further undermining the credit due to his important contributions (Rookmaaker 1989).

Louis Jean Pierre Vieillot (1748-1831) was frustrated by his slow progress in the scientific world, so he emigrated with his young family to the French colony of Santo Domingo (Hispaniola) to seek new business opportunities and pursue his interest in birds. When the French Revolution began in 1789 he went to the USA for several years to avoid military service, returning to Santo Domingo in the 1790s. He originally planned to gather material to offer to Buffon, but the latter advised him to perform his own studies. He set out for France with his family in 1798, but lost his wife and three daughters to yellow fever on the way and arrived alone. He soon began working with several artists and, mostly using his own material gathered in North America and the West Indies, produced a series of large illustrated works from 1800 to 1809 (Ronsil 1957). In the last of these, the *Histoire Naturelle des oiseaux de l'Amérique septentrionale* (1807-1809), he began to use the Linnaean system. These publications also provided him with his first opportunity to develop his own ideas on classification. With the help of Charles Dumont de Sainte-Croix (1758-1830), who provided him with an income, he further developed his ideas in the then popular series of dictionaries of natural history, to which Dumont was also a contributor.

Bernhard Meyer (1767-1836), a court councillor to the Prince of Isenburg, was also a doctor who found more time for ornithology by taking over an apothecary business. He became a leading figure in the study of German birds and in a series of

works from 1810, began applying his ideas on using strict Linnaean principles. At this time of great activity for German ornithology, this influence was important because it was also an influential time for the school of German “natural philosophy”, whose leading proponent was Lorenz Oken (1779-1851). Oken summarized these ideas in his *Lehrbuch der Naturgeschichte: Zoologie* (1815-1816), but the concepts deriving the natural world from the intellectual, with all designs and levels of nature graduating towards the ultimate ideal, the human form, were taking the concept of “artificial” vs “natural” systems back to the Middle Ages. There were critics, but also followers, and Oken also used his journal, *Isis*, to develop his ideas further, although it finished in 1848, when Oken could no longer continue it.

Johann Carl Wilhelm Illiger (1775-1813), originally working in entomology, became involved with ornithology when new collections from the recently opened country of Brazil arrived in Germany (Stresemann 1950). One of his concerns was establishing the correct terminology of classifications and for birds this was provided in his *Prodromus systematis mammalium et avium* (1811), where he attempted to rework Linnaean principles for classifications at all levels. He was the first to seek precise order in nomenclature, even going as far as to propose to outlaw names he considered as barbarisms, a practice that gained a few followers, particularly in Germany. The practice lingered for many years, with the last vestige as late as 1890 (Heine & Reichenow 1882-1890), in spite of the famous attack on the subject by Allan Octavian Hume (1829-1912) in his review of a parrot monograph; this was *Die Papageien*, published by Friedrich Hermann Otto Finsch (1839-1917) in 1867-1868. Hume complained about “a certain section (chiefly Continental) of naturalists” who would change names because they were not classically formed, thus cheaply creating new names for themselves: “Let us treat our author as he treats other people’s species. ‘Finsch!’” contrary to all rules of orthography! What is that “s” doing there? “Finch!” Dr. *Fringilla*, MIHI! Classisch gebildetes wort!!!” (Hume 1874a). Hume was in turn attacked for his attack, but Finsch changed his ways and the two of them soon established friendly exchanges (Hume 1874b).

Illiger further developed his ideas in 1812 with a paper entitled *Tabellarische Uebersicht über die Vertheilung der Vögel über die Erde*, where guidelines on delineating the relationships of birds were demonstrated, but it was not published until 1816. It was also the first biogeographical study of birds. He was also seeking to develop a new method in opposition to what he saw was happening in France, where the considerable influence of Cuvier was later consolidated in the first of his two editions of his *Le règne animal* (1816-1817, 1829-1830); this work was later expanded by his “disciples” from four to 17 volumes (1836-1849), and also translated into English, German and Italian (Farber 1982). Illiger recognized 7 orders, 41 families and 147 genera. He was the first to establish the concept of the family category for birds as we know it today, although after being refined and standardized by later workers (Bock 1994). Illiger, dogged by illness for years, tragically succumbed to a haemorrhage at an early age when he had barely begun his work, but his concern not to overload the Linnaean system with names was ignored by all but a few followers.

Coenraad Jacob Temminck (1778-1858), a member of a wealthy Dutch family, was first influenced by Levaillant in developing his ideas in ornithology, as he came to know Levaillant through the sponsorship of his explorations by his father, Jacob Temminck (1748-1822). During his honeymoon in Germany, in 1804, he stayed with Meyer, who influenced his ideas and encouraged him to adopt the Linnaean system. His first book was a catalogue of his collections, in 1807, in which he followed Linnaeus (Stresemann 1953). He was also working on monographic studies of pheasants and pigeons. By chance, at this time in Paris, Pauline de Courcelles (1781-1851), a gifted artist, planned to paint pigeons and needed someone to write a text. Temminck agreed and began at once, with the first part of what became a sumptuous, illustrated, but incomplete volume, *Les Pigeons* (1808-1811), appearing within months. The artist became Madame Knip in 1808 and decided to swindle him by claiming credit for the whole work, beginning with the title of the ninth part. She wanted to win favour with the new empress and succeeded. Temminck was sent some copies with the correct title, but he found out about the swindle when he visited Paris (Coues 1880; Mees 1975). The two parted in anger, although they eventually reconciled some years later. Temminck abandoned the larger project and instead published his monographs in a cheaper version, the three-volume *Histoire générale des pigeons et des gallinacées* (1813-1815), with an explanation of what happened. The influence of Meyer’s work, amongst others, also inspired Temminck to produce the first edition of his *Manuel d’ornithologie, ou tableau systématique des oiseaux qui se trouvent en Europe* (1815). His classification of birds followed the Linnaean system which was expanded in the second edition of his *Manuel* (1820, supplements 1835, 1840). These were very influential and became the standard work on European birds for many years. In 1820 he



was also inspired to begin another large, illustrated series as a supplement to the work of Buffon, and this was to make up five volumes by its end, in 1839 (Dickinson 2001). This work mainly illustrated some of the new birds arriving at his museum at Leiden, but Temminck's pace slowed and much material went unstudied for many years, as he locked away many specimens that he never found time to study.

In the meantime Vieillot, apparently ignorant of Illiger's reforming work, had developed a new classification of birds to express their natural relationships as early as 1813 but delays meant that he finally rushed his *Analyse d'une nouvelle ornithologie élémentaire* into print himself in 1816 to antedate Cuvier's forthcoming work. In it he recognized 5 orders, 57 families and 273 genera, including the merging of the Picae and Passeres into his "Sylvicolæ"; some of his new genera were also named by Cuvier, but too late. In response to criticisms, this classification was reworked in his numerous articles in the second edition of the *Nouveau dictionnaire d'histoire naturelle* (1816-1819), where many new species were named using earlier works, particularly on South American birds, and also collections in Paris from the recent French scientific voyages; as the museum staff in Paris refused to help him, he took his descriptions of new birds in the collection from the public galleries. These numerous articles were collected and revised when he resumed work on Bonnaterre's *Tableau encyclopédique*, which had been incomplete when it ceased in 1791, the new edition appearing in three volumes in 1820-1823. Although Vieillot was seeking a natural classification, he was immediately criticized by Cuvier and also by Temminck, who presented his views in a pamphlet, *Observations sur la classification méthodique des oiseaux, et remarques sur l'Analyse d'une nouvelle ornithologie élémentaire par L. P. Vieillot* (1817). Temminck considered it vague and artificial, particularly because of the emphasis on foot structure and overlooking Illiger and other recent works, especially his own. Of Vieillot's numerous new genera, Temminck complained of his pilaging and plagiarizing of many of those of Illiger and Cuvier in particular, and concluded by urging others like him to abandon this sterile work.

Temminck elaborated on his views in the first volume of his revised *Manuel* (1820), where his attacks on Vieillot were also extended to Vieillot's dictionary articles, including his criticisms of Temminck in response to his pamphlet. These were regarded as puerile in view of his pretentious work, an overreaction to his own faults, displaying an ignorance of German works and embarrassing for his unnecessary and badly created names, stealing many already given by Illiger and others. However, Temminck's focus, too, was on developing a natural classification. As a result, apart from his reactions to Vieillot, he attempted to bring together everything yet published of worth, disregarding Illiger's concerns for nomenclatural purity, and finding problems with more than just Vieillot's classifications. His bile towards Vieillot was also extended to Gmelin's "miserable compilation" unworthy of association with Linnaeus. In spite of such concerns, Temminck was committed to developing a carefully constructed classification out of the increasing chaos of the time and in this he anticipated Strickland's later concerns. His natural system contained 16 orders and 201 genera, with the family category almost ignored. While he reluctantly accepted some of Vieillot's new names, he gave preference to Cuvier's later names in some cases and because of the influence of this classification, Temminck also created a little chaos of his own. While the younger Temminck would achieve success, Vieillot spent his last years blind and in poverty (Olivier 1965). In spite of the hostility he endured in his lifetime, he succeeded in publishing much useful work that was greatly appreciated in later times.

Christian Ludwig Nitzsch (1782-1837) was the first of a group of anatomists to make important contributions by studying particular characters and how they affected the relationships of various groups and of the higher categories of birds. He is best known for his studies on pterylography, from as early as 1806, but his major work on the subject was published posthumously (1840, translated into English 1867). He also wrote, for example, on osteological characters and the nasal glands, and in his extensive study of the carotid arteries, *Observationes de Avium arteris carotide communi* (1829), he used his findings with other characters to propose his natural classification; this was later modified in his work on pterylography. Henri Marie Ducrotay de Blainville (1777-1850), Cuvier's successor, began his studies of the sternal characters of birds in 1815 to find a natural classification. His rearrangements of the higher categories were influential, and he split passerines into "true" and "false" groups, and importantly, he separated *Menura* from the gallinaceous birds (1821). Felix Louis L'Herminier (1779-1833), from the island of Guadeloupe, was a pupil of de Blainville and further developed the study of sternal characters, but also combined them with other anatomical data in developing his natural classification (1827). There are some similarities in how L'Herminier and Nitzsch worked out their higher categories and they may have developed some of their ideas together. There may, too, have been some influence from the 1816 classification of Merrem, also using anatomical data.



The main results of these and other anatomical investigations of this period of activity were in developing the restructure of higher categories closer to those recognized today. For example, in 1829 Nitzsch separated swifts from swallows, placing them nearer the hummingbirds.

Nicholas Aylward Vigors (1785-1840), a politician by profession, was at the heart of ornithological activity in London. He was influential to many at the time, notably helping to start John Gould (1804-1881) on his way to producing his famous bird folios (McAllan & Bruce 2002). This influence also took some ornithologists in a different direction for a while, when he developed a classification for birds based on what became known as the Circular or Quinarian System. This system was introduced by William Sharp MacLeay (1792-1865) in *Horæ Entomologicæ* (1819-1821), when he found that philosophical ideas of the time on the concept of divine order in the universal chain of beings could be expressed geometrically and numerically. As with the German natural philosophers of this period, who also had influenced MacLeay, old ideas were new again. Vigors took MacLeay's ideas further in applying them to birds in articles published from 1824 to 1830, particularly his 1825 essay, *Observations on the Natural Affinities that connect the Orders and Families of Birds*. Here it could be shown that all natural groups form five circles of equal rank, with each subdividing into five, thus five orders, five tribes [suborders], five families (O'Hara 1988, 1991). He also applied his ideas to a major report on Australian birds, in 1826, containing many new species, but only the first part was published (Vigors & Horsfield 1827). His classification may be ignored but he certainly helped standardize family names for birds.

William Swainson (1789-1855) developed an early love of natural history through his father's interest in insects. He wanted to travel and managed to visit various parts of the Mediterranean during military service in the latter years of the Napoleonic wars (1807-1815). As Brazil had recently opened to foreigners, he visited several areas to study and collect birds and other natural history objects in 1816-1818. He began publishing on birds and wanted to apply his drafting skills to illustrating birds. He was encouraged to try the new process of lithography and produced and published the first lithographic plates of birds in 1820, subsequently continuing with several series, mostly of birds and shells (Jackson 1975). Through Vigors and his work on the subject, Swainson became acquainted with the new circular system and embraced the concept with much enthusiasm. He supported and defended it at every opportunity with such fervour that by 1827 he had fallen out with Vigors (and later claimed credit for some of Vigors's new names) and MacLeay. Like Vigors he adapted and modified the scheme, but, while the circular arrangements were still placed in groups of five, he refined them with subdivisions of three and two to make the five. To Swainson the natural system meant finding the appropriate placement of each species or higher category according to their affinities and analogies (Knight 1981). In cases where he determined that there were gaps in the groups of five, these were to be filled later by an as yet undiscovered taxon. With failed investments, the death of his wife in 1835, and five children to raise, as well as his missing out on a coveted position at the British Museum, he turned to hack writing for a living, and quickly contributed volumes to two popular series of the day. These works gave him a great opportunity to develop his version of the circular system. He summarized his ideas on birds in his *On the Natural History and Classification of Birds* (1836-1837), and last wrote on the subject in *Flycatchers* (1838). After 1838 his critics in England had finally won the field, and Swainson's authority and reputation as an ornithologist were seriously damaged, if not completely destroyed. In defeat and dire financial straits, Swainson emigrated to New Zealand, an embittered man, in 1840 and, although he lived another 15 years and retained his interest in birds, he published nothing further on them. In New Zealand he had a slight influence, however, both good and bad, on a young Walter Lawry Buller (1838-1906), later to become the great authority on the birds of New Zealand (Galbreath 1989).

Hugh Edwin Strickland (1811-1853) was a geologist by profession and the son-in-law of Sir William Jardine (1800-1874), a well-known ornithologist, who, amongst other things, produced the first bird journal in England. Strickland is known for his reports on developments in ornithology, was a stern critic of the philosophically based classifications, and played a major role in the defeat of the Quinarians. However, in spite of the success of eliminating the Quinarians from England, similar philosophical classifications continued in Germany for another twenty years, although with little influence. Meanwhile, Strickland continued with his strong views on classification and nomenclature until his tragic early death: hit by a train, while inspecting a rock cutting near the railway line. His most important contribution towards bringing order out of chaos was his development of the first modern code of nomenclature in 1842, based on the twelfth edition of Linnaeus of 1766, but with some compromises to appease the critics. It was revised in 1866, while other codes emerged. By the 1870s

there was strong support for fixing nomenclature on the tenth edition of Linnaeus of 1758 and this became the new starting point, beginning with the code of the American Ornithologists' Union (1886). However, in Europe, particularly England, the twelfth edition as the starting point lingered for 20 years in most standard works. One of Strickland's compromises was the acceptance of Brisson's genera, even though they were published in 1760. This was influential in moving opinion towards the tenth edition, as this would not require any exceptional cases (there was also the problem of Brisson's mammal genera of 1762). In 1895 the attempt to unify the competing codes began, with the first international rules appearing in 1905, and the first code as we know it today, the International Code of Zoological Nomenclature, eventually appearing in 1961, with the fourth edition coming out in 1999. So far, only categories up to the level of family name are covered by the code. After being in and out of favour over many years, Brisson's bird genera were finally accepted in 1955 (Bock 1994; Melville 1995; ICZN 1999).

Johann Jacob Kaup (1803-1873), unsuccessful as an assistant to Temminck in 1825, returned to his home town of Darmstadt in Germany and spent his career at the local museum (Heldmann 1955). He published a preliminary classification of birds as early as 1829, and presented his views in more detail in his *Classification der Säugethiere und Vögel* (1844). He followed the philosophy of Oken and also used the mystical number five, where the systematic categories were based on their developments from one each of five anatomical characters, five sense organs and five areas of the body. Instead of circles he used pentagrams, and he maintained these ideas in later works. Amongst several attempts to develop philosophical rules of classification, the most significant work in addition to Kaup's was carried out by Heinrich Gottlieb Ludwig Reichenbach (1793-1879) who produced a series of publications from 1834 to 1863 known under the general title of *Das Natürliche System der Vögel* (see Meyer 1879). He followed Oken more closely and retained the division of categories according to the number four. In following this method, he could claim that his systematic works were the most complete natural histories of the successive groups covered. Leopold Fitzinger (1802-1884), primarily working in herpetology, adapted Kaup's philosophy in his *Über das System und die Charakteristik der natürlichen Familien der Vögel* (1856-1865) and placed birds amongst the other vertebrate classes in five parallel rows for a continuous series from lowest to highest forms. This was considered to be the only way to make a natural classification and marks the passing of any serious efforts to create a philosophically based natural system.

Johann Wagler (1800-1832), based at the recently established museum in Munich, followed the developments and influence of Illiger. After studying various European collections, he began work on preparing the first detailed summary of all known birds since Latham, but only the first part of his proposed *Systema Avium* appeared in 1827, providing monographic coverage of 49 genera. This work was also an attempt to refine the nomenclature of birds. In 1830 he included a summary classification of birds in his *Natürliches System der Amphibien mit vorangehender Classification der Säugethiere und Vögel*, but his early death from the effects of a stray shot on a hunting trip curtailed further work on his ideas. René Primevère Lesson (1794-1849) had participated in the voyage of the *Coquille* around the world (1822-1825) and reported on the birds. His interest in ornithology led to the publication in 1828 of his little *Manuel d'ornithologie*, and the appearance of this work may have caused Wagler to discontinue his *Systema* project. Lesson later extended his classification with his *Traité d'ornithologie* (1830-1831) and published other systematic reviews, most comprehensively on hummingbirds, and also updates of Buffon's works. These classifications, like many of this period, had little or no lasting value and such works are mostly known today for the many genera and species named within these attempts to achieve a natural system.

Constantin Wilhelm Lambert Gloger (1803-1863) applied anatomical details to his partial classification in his uncompleted book *Vollständiges Handbuch der Naturgeschichte der Vögel Europa's* (1834). This study is notable for dividing the passerine order on the basis of the syrinx (i.e. clearly demonstrating the need to separate the old Pico-Passerines into passerines and picarian birds). Gloger began further studies on classification in *Gemeinnütziges Hand- und Hilfsbuch der Naturgeschichte* (1841-1842) but this work ended after one volume and is best known for various new genera proposed. Edward Blyth (1810-1873) wrote a series of six articles on the classification of several groups of birds in 1838. Blyth covered the passerines, and his results were notable for his attempts to use anatomical characters in some detail and apply the influences of geographical distribution. Blyth took his enlightened ideas to India, where he spent 21 years (1841-1862) as Curator at the Asiatic Society of Bengal Museum in Calcutta, producing a long series of papers, forming a solid foundation for Indian ornithology (Grote 1875). William Macgillivray (1796-1852) applied sev-



eral anatomical characters in his classification attempt in his famous *The History of British Birds* (1837-1852), considered the best work of its kind during that period (Mullens 1909c). He also contributed important details to the *Ornithological Biography*, vols 4-5 (1838-1839), of John James Laforest Audubon (1785-1851), wherein amongst other things he noted the distinctness of the tyrant-flycatchers (Tyrannidae) due to their syrinx, but he did not realize the implications. This work formed the text to the famous plates of *The Birds of America* (1827-1838), with Macgillivray's contributions replacing those of Swainson, who had fallen out with Audubon (Ford 1964).

Graf Alexander Friedrich Michael Lebrecht Nikolaus Arthur von Keyserling (1815-1891) and Johann Heinrich Blasius (1809-1870) looked at the syrinx and tarsal scutellation of some passerines in 1839. Their paper, *Über ein zoologisches Kennzeichnen der Ordnung der Sperlingsartigen – oder Singvögel*, described consistent patterns suggesting that these potentially useful characters needed further investigation. These studies were preliminary to their book *Die Wirbelthiere Europa's*, but only one volume was published, in 1840. Johannes Peter Müller (1801-1858) provided the results of his detailed study of the structure of the syrinx in his *Über die bisher unbekannten typischen Verschiedenheiten der Stimmorgane der Passerinen* (1847, translated into English 1878). He established the major division of passerines into the oscines and suboscines, and this conclusion has survived to this day as the first important study of the modern classification of passerines. Jean Louis Cabanis (1816-1906) was the curator at the museum in Berlin (1849-1892) and founding editor of the oldest ornithological journal still running, the *Journal für Ornithologie*; he was editor from 1853 to 1892, and as such had great influence in Germany. He was stimulated by Müller's work and applied the latter's findings to his study using external characters, such as the tarsal scutellation and number of primaries, in his influential interpretation of passerines in an essay known simply as *Ornithologische Notizen* (1847). These ideas were expanded in detailed family summaries presented in his catalogue *Museum Heineanum* (1850-1863), also a source of criticism of nomenclature and an attempt to eliminate barbarisms.

George Robert Gray (1808-1872) produced *A List of the Genera of Birds* in 1840, revised in 1841, updated in 1842, greatly expanded into three large volumes as *The Genera of Birds* (1844-1849), and summarized in 1855. All of these works were important in the fixing of type species to genera and had a great influence. Gray's three-volume effort was a standard work in its day. Alfred Newton (1896) praised it as a work of genius, although acknowledging Gray as "a thoroughly conscientious clerk" and only an ornithologist by accident. The work not only listed about 2400 genera and had many illustrations, but also provided lists of species for each genus. In spite of the increase in the number of genera and species by the 1840s, the basic Linnaean system still had to be made to accommodate them, especially after the Quinarians were discredited. When Gray later summarized every known name given to genera and species up to that time in his famous *Handlist* (1869-1871), he provided a wealth of detail in what became an important new classification. For an accidental ornithologist, Gray's contributions are all the more remarkable as being the cornerstone of all subsequent work on classification, as well as nomenclature.

Hermann Schlegel (1804-1884), Temminck's patient and long-suffering assistant and eventual successor, made an important contribution to the classifying activity in Europe in 1844. In both his *Kritische Übersicht der europäischen Vögel* and the first part of the *Aves* portion of *Fauna Japonica* he developed the first attempt at consistent use of trinomial nomenclature. He intended these names to be used to understand local variation of species in the way subspecific names are used today. This was also perhaps a more practical interpretation of the variety category in the Linnaean sense, which was applied in different ways by earlier workers. While Schlegel's ideas gained some followers, particularly in Germany (Haffer 1992), it would take another 50 years before this idea began to have serious influence on bird systematics. In 1844 there were still many problems interpreting classifications as fixed entities, although the implications of variation, in a more scientific sense, beginning with studying species, continued to intrude.

Charles Lucien Jules Laurent Bonaparte (1803-1857) began his studies in Europe under the influence of Temminck's *Manuel*. His work later developed with American birds, after his family was forced into exile and moved to Philadelphia, and he supplemented the pioneering work of Alexander Wilson's (1766-1813) *The American Ornithology* of 1808-1814 (Cantwell 1961). Bonaparte's interest in the classification of birds began in 1831 in association with an interest in all vertebrates. Plans at the time to collaborate with Swainson in a review of all known birds fell through because Swainson demanded too much money in order to be involved. His ornithological interests were combined with political activities in the 1840s, and eventually he planned to proceed with his review of all the birds of the world. Political events decided the



outcome, and in exile in the Netherlands from his family in Italy in 1849 he began his project with the support of Temminck and Schlegel at the museum in Leiden. This was to be his *Conspectus Generum Avium*, the first volume appearing in 1850 after intensive efforts. His punishing schedule was spurred on by assassination attempts on his family in Italy and fears for his own safety, and his work was completed shortly afterwards, in Paris, when he was finally allowed to return to France. The first volume included passerines but with a conservative classification, as Bonaparte's focus was on delineating genera and species.

This work marks the end of the first wave as it became the standard reference in its day for a summary of world birds, especially with its clear format and brief diagnoses of species. However, it needed a second volume to complete the coverage of all birds, and Bonaparte continued his work on it in Paris, as before also visiting other collections. He also later published an extensive series of papers, featuring the development of his higher classification of birds. He placed his families in parallel series, including tabulations of nearly all groups as he worked through them, creating many new families as well as genera and species in the process (e.g. Bonaparte 1853, 1854). His intensive activity continued through the 1850s as he worked with a sense of urgency due to his deteriorating health. He told a visiting friend, "The more I have to put up with, the more I work", when found writing in his bathtub (Hartlaub 1858). Although he distributed portions of the second volume of his *Conspectus* from 1854 almost up to his death in 1857, it was incomplete (Stroud 2000). Coues later commented: "I regard Bonaparte's services to the science of Ornithology to have ceased in 1850", and that all his later classifications were "not only a worthless but a pernicious aggregate", before launching into an attack on the eccentricities of his nomenclature, using hummingbirds as an example (1880). In some respects, Bonaparte's naming methods, so distasteful to Coues, were similar to the German school of classical purity criticized earlier by Hume. However, Bonaparte often applied his sense of humour to his naming and certainly did not appear to seek purity in his choices. In his last years Bonaparte also intuitively revealed an evolutionary interpretation of birds, as by then he was one of the few ornithologists familiar with world birds, and he had developed these ideas from this detailed familiarity.

Other developments after 1850 were influences or extensions of classifications established before 1850, such as the review of North America birds by Baird *et al.* (1858). Charles Darwin (1809-1882) finally brought out his *On the Origin of Species* in 1859 and the influence of this work in ornithology was soon apparent (e.g. Tristram 1859). Evolutionary ideas had been around for some time in one guise or another but it was Darwin who pulled it all together and crystallized the concept in a way that enabled it to be applied to systematic studies as never before (Mayr 1991; Gould 2002). The application of the theory of natural selection would soon begin to be applied to the classification of birds. Then, all the old philosophies and misguided ideas would be jettisoned, and Alfred Russel Wallace (1823-1913), an important influence on Darwin, hoped "that the chaos which has so long existed in ornithology will soon give way to a truly natural system which must obtain general acceptance" (1864). Blyth considered such chaos "as unmitigated heresy, to be repudiated by every devout ornithologist" (1866). But amongst the earlier works on bird classification there were still many good ideas and developments that would need to be reworked just to show that, while evolutionary studies would eclipse what went before, there had already been a number of ornithologists with insight and genius to pave the way.

### ***The second wave: evolution and adaptation (1867-1934)***

While there was resistance in some quarters to the impact of Darwin's book and its effect on how classifications had been worked out, it was also seen as a way, at last, to make serious progress in the quest to find the natural classification of birds. The second wave of activity in bird systematics was thus launched with a real sense of purpose and the differences between homology (affinity) and analogy took on completely new meanings. Thomas Henry Huxley (1825-1895), "Darwin's Bulldog", presented the first re-interpretation of birds in this new evolutionary light. In his paper *On the classification of birds* (1867) he devised his arrangement of the higher categories using the structure of the bony palate – "the great palatal subdivision". Huxley was soon criticized for applying only one character to his study (Newton 1868), and, while the choice of the palate seemed arbitrary, he was limited by the available material, where skulls were commoner than whole skeletons. This classification was very influential on subsequent developments in the investigation of anatomical characters and their potential taxonomic value. Although based on earlier principles, Huxley later used his classification as evidence of evolution (di Gregorio 1984). It was still to require a few more

years of investigation before the intimate relationship of the form of a character and its function was understood sufficiently when assessing its value in classifying birds.

Carl Jacob Sundevall (1801-1875) was based at the Natural History Museum in Stockholm for 32 years (1839-1871). He was long interested in the classification of birds and, as well as reports on collections, notably those of Swedish explorers in Africa, he wrote critiques on several earlier works, such as that noted above of Levaillant. He brought together all of his accumulated ideas on classification in his *Methodi naturalis avium dispondarum tentamen* (1872-1873, translated into English 1889). However, he considered it a mere new edition of his 1836 classification, so that in many ways it was already out of date. He used internal and external characters in creating his classification and considered both types to be of equal value. In spite of his old bias towards external characters he made extensive use of characters of the muscles of birds. His separation of most passerines was based on the absence of a vinculum between the deep flexor tendons of the toes. In spite of the flaws in his classification, the timing of its appearance gave it far more influence than it apparently deserved.

Philip Lutley Sclater (1829-1913) was closely following these new developments. During his 43 years as Secretary of the Zoological Society of London (1859-1903) he was at the centre of ornithological activity in England and encouraged many people to collect birds for the society, often writing the reports of discoveries himself. He was possibly the most prolific ornithologist of his day with the majority of his 1287 titles by 1896 on birds (Goode 1896), and he was editor or co-editor of the famous ornithological journal *Ibis* for all but a few years from its beginning in 1859 until 1912. He initiated a new series of anatomical studies in 1872 and, when reviewing progress in 1880, he also proposed his own classification, although he had already experimented with one earlier for his area of special interest, the Neotropics (Sclater & Salvin 1873). With the encouragement of Huxley, who wanted an anatomist working at the society, Sclater had already created the position of Prosector (a title made up by Huxley) in 1865 (Evans 1913). A succession of four anatomists, Murie, Garrod, Forbes and Beddard, held the post and published a large number of studies on birds over the next 50 years. Although this core of material had an impact on later developments in bird systematics, the classifications used during the period were still carrying much baggage from those of the previous century, partly thanks to Sundevall. Also, the last part of the most complete list of the birds of the world at the time had recently been completed (Gray 1869-1871). It bore the legacy of the beak-foot-feather school of systematics, yet evidence of Gray's characterizations of families can be seen in classifications ever since.

Alfred Henry Garrod (1846-1879) studied several characters, including the nasal bones, the carotid arteries, the tracheal and syringeal structures and the deep plantar tendons (Forbes 1881). His study of the muscles of the thigh, particularly the ambiens muscle, led to the development of his influential "pelvic muscle formula" for defining the higher categories of birds, and he presented his ideas in his paper *On certain muscles of birds and their value in classification* (1874). Like Huxley, his failure to understand fully the relationship of form and function created anomalies. His assistant and successor, William Alexander Forbes (1855-1883), reviewed Garrod's findings and studied additional characters and taxa, particularly in a series of papers on passerines (Beddard 1885). The tragic early deaths of Garrod, from a lung condition, and Forbes, from dysentery during a visit to Nigeria, prevented further development of the potential in ideas that both had demonstrated.

Elliott Coues (1842-1899) was one of the great figures in nineteenth-century American ornithology. He was a prolific writer and observer, producing some of the classic works of American ornithology, including a famous bibliography series, but he also wrote in many other areas and became embroiled in various controversies of the time, from sparrows to spiritualism. He later edited historical accounts of early exploration, but his incessant activity caught up with him and he succumbed to various illnesses on Christmas Day 1899 (Cutright & Brodhead 1981). His interest in classification came early, with his first important systematic publications appearing when he was only 19. He began to reconcile the old classifications with recent developments as early as 1872, in the first edition of his influential *Key to North American Birds*. As in England, the position of the passerines in the overall sequence (whether placed first or last), was an issue, and the preferred option varied amongst the classifications proposed. In 1872, Coues placed the passerines last but he changed them to first in 1874, in *Birds of the Northwest*, and there they stayed up to the first edition of the AOU Checklist (1886). In England, Sclater preferred passerines first, even after Coues visited England in 1884 to promote his views. This led to the situation where the second edition of the BOU Checklist (1915) was still "passerines first", in spite of the recent appearance of a British list adopting the new classification principles, with passerines last (Hartert *et al.* 1912). Ernst Hartert also used this book to promote the acceptance



of trinomial nomenclature in Britain. The influence of what Coues and others had been doing for the AOU had taken root in the Old World, but was still resisted in some quarters (Barrow 1998).

Richard Bowdler Sharpe (1847-1909) was the most famous ornithologist at the turn of the twentieth century. Much of this fame rested on the monumental *Catalogue of Birds in the British Museum* in 27 volumes (1874-1899). Although the task of its preparation was too much for one man, Sharpe managed to write about half of it and edited the remainder. In planning the work in 1872, Sundevall's classification was influential and formed a basis for the classification adopted, although parts were modified as it progressed, particularly from the anatomical work of Garrod and others. Also, Gray's *Handlist* of 1869-1871 was of obvious importance in resolving the fate of masses of names in need of coverage by the *Catalogue* classifications, although not all of them actually found their way into these volumes. In the *Catalogue* the birds of prey and owls came ahead of the passerines (Vols 3-15, 1877-1890). Sharpe's fame also rested on the many papers and books he wrote, particularly in later years with ten growing daughters to support, when he most famously completed the last of Gould's great folios (Fagan 1910; Ogilvie-Grant 1910). Moreover, he was possessed of a great sense of humour, and was friendly and supportive to everyone who came his way, so his sudden death on Christmas Day 1909, after a short illness, was a great shock at the time. But there was one person he did not get along with: Henry Eeles Dresser (1838-1915), a former collaborator of his, who wrote a major work on European birds. He was even known to try and lock Dresser in the museum overnight (Ingram 1966).

Anton Reichenow (1847-1941), son-in-law and successor to Cabanis at the museum in Berlin, developed his "logical" system as early as 1882, in his *Vögel der Zoologischen Garten*. He was, and remained, under the influence of the strong opposition in Germany to Darwinian ideas (Haffer 2001). His arbitrary system reflected the remnants of German nature philosophy with its roots in the sixteenth century. Reichenow became the leading authority on African birds in his day, describing many new species, as well as writing several important reference works. William Robert Ogilvie-Grant (1863-1924), Sharpe's assistant and later successor at the British Museum, complained about Reichenow's taxonomy. When discussing a particular species he opined that "this is only one of the many instances in which this author has relegated very distinct forms, which he has never examined, to the synonymy of some allied species" (1907). This may be a result of Reichenow's philosophy, but it has also been noted that "he dislikes the English and takes no pains to conceal it" (Meinertzhagen 1959). Opposition in France lingered, too, so that Léon Olphe-Galliard (1825-1893) did not see any need to change his 1857 classification in his major work, *Contributions à la faune ornithologique de l'Europe occidentale* (1884-1891). Nevertheless, as in England, the influence of the old guard was nearing an end.

Leonhard Hess Stejneger (1851-1943), a Norwegian, was advised to pursue his interests in birds in America, and he became associated with the Smithsonian Institution for 58 years, later working more extensively in herpetology. He was invited to contribute on birds to a popular work, and used the bird volume of *The Standard Natural History* (1885) to develop a detailed classification with much attention to anatomical, as well as external, characters, and in which he placed the passerines last. Stejneger provided detailed diagnoses of the higher categories and revised their nomenclature, bringing it close to current terminology, such as in the subdivisions of the passerines. The initial influence of this work was limited in Europe, as it appeared in a popular American work, but its favourable press brought it to the attention of Sharpe and Gadow, who were then reviewing and developing new classifications of birds.

Maximilian Fürbringer (1846-1920) was a comparative anatomist with an interest in birds. Working in the Netherlands, he investigated the evidence of previous classifications and, with a clear eye on the interrelationships of form and function, he produced two large volumes of 1750 pages under the title of *Untersuchungen zur Morphologie und Systematik der Vögel*, in 1888 (reviewed by Gadow, 1888). His study covered living and fossil birds and also attempted to trace the evolutionary origins of the Class Aves. His refinement of the higher categories of birds was well in advance of anything that had gone before, and he recognized 45 orders (his "Gentes"). Amongst other classification reforms, he abolished the traditional division of birds based on the absence (Ratites) or presence (Carinates) of a keel on the sternum (introduced by Merrem in 1816). The splitting of the ratites into several orders has been a feature of a large number of classifications ever since. At the other extreme, the passerines, placed near the end of his sequence, were considered to be so morphologically uniform that he placed them all in only two families.

Henry Seebohm (1832-1895) worked in the steel business, but in later years was able to devote more time to ornithology, with expeditions to Asia Minor and Russia to study birds also found in Europe in the field. He wrote books on British and Japanese



birds, shorebirds and thrushes, and through these he developed an interest in the higher classification of birds which he first summarized in *Classification of Birds* (1890, updated 1895). He recognized 14 orders and 36 suborders, all provided with brief diagnoses. Although his classification scheme was criticized, it was largely accepted by Sharpe in his *A Review of Recent Attempts to Classify Birds* (1891), an address to the Second International Ornithological Congress in Budapest. Sharpe's classification, with diagnoses of categories and placing the passerines last, was based mainly on Seebohm and Stejneger. In presenting his views, he used the image of the ideal museum exhibition, where each display presented the next part of his classification. He sent a copy to Huxley, who replied: "I wish something like it had existed a quarter of a century ago when I was trying to find my way through the chaos of Ornithological Classification. It would have saved me a world of labour, which I am glad to find was not altogether in vain." (Fagan 1910). Sharpe retained his 1891 classification in his last great work, the five-volume *A Hand-list of the Genera and Species of Birds* (1899-1909) because, as he noted in the introduction to volume one: "I have seen no reason to modify the conclusions there recorded in any material degree." However, when he reached the passerines (Vols 3-5), a few modifications were in fact made.

Hans Friedrich Gadow (1855-1928), a close friend of Fürbringer sharing his background in anatomical studies, was working in England as the Curator of the Stricklandian Collection and as a lecturer in vertebrate morphology, at Cambridge University. He also shared an interest in the classification of birds and developed his own scheme, the two having also contributed to each other's ideas. Apart from this collaboration with ideas and data, Gadow also reviewed all previous classifications since Huxley. His conclusions differed from Fürbringer's in several respects and he felt the need to apologize for publishing yet another classification of birds, first in his paper *On the classification of birds* (1892), and then in more detail in the section on bird systematics in Bronn's *Klassen und Ordnungen des Thier-Reichs* (1893). No apology was necessary. In reviewing earlier work, particularly synthesizing the mass of detail provided by Fürbringer, the classification he presented is the true parent of all higher classifications in use ever since.

Alfred Newton (1829-1907) was a distinguished professor of Cambridge University and a leading figure in ornithological developments for over 50 years (Wollaston 1921). He was also a friend and colleague of Gadow, and wrote a masterful and erudite essay on the history of ornithology down to 1896 in the introduction to his famous *A Dictionary of Birds* (1893-1896), with anatomical contributions by Gadow. He concluded his introduction by providing a thorough review of developments up to Gadow. After finally discussing the problems with classifying the oscine passerines, he remarked: "A perusal of the foregoing can hardly fail to confirm the doubts already expressed...as to the validity of any Systematic Arrangement of Birds as yet put forth. Still the history of ornithology, as here sketched, gives hope of the ultimate attainment of the object sought by so many earnest students of the Science, though a long time may yet elapse before that end is reached."

Frank Evers Beddard (1858-1925) followed through with the earlier plans of Garrod and Forbes to provide a handbook on avian anatomy, even though the recent publications of Fürbringer and Gadow made him feel the need for such a work was no longer there. Beddard, however, undervalued the usefulness of his *The Structure and Classification of Birds* (1898). It is a valuable summary for English-speaking ornithologists and anatomists and its utility for details of anatomical characters remains today; for example, it was the basis for diagnoses of orders and families in Sibley & Ahlquist (1990). Beddard focused on form in his book and William Plane Pycraft (1868-1942), in his *The History of Birds* (1910) was a critic of this approach, arguing that "habits precede structure". Arthur Humble Evans (1855-1943), working in collaboration with Gadow and following his classification, had already provided a valuable companion work to Gadow and Beddard with his volume on *Birds* in *The Cambridge Natural History* series (1899).

The arrival of the twentieth century coincided with a decline in interest in the higher classification of birds. It seemed that a natural classification of birds had been achieved, in spite of the views of Newton, but a trickle of publications continued for a while to tidy up some of the details. When two major regional works began, they also shared the view that only a few details needed to be sorted out because the new focus was on the systematics of genera and species, and on the development of the recently arrived subspecies, accepted after much debate. In fact, both works ensured a secure place for trinomial nomenclature. Robert Ridgway (1850-1929) began his great work on *The Birds of North and Middle America* in 1901 with the passerines, not as a statement on classification sequence of orders, but because the smaller birds were more readily available to study in the overcrowded museum collections. Ernst Johann Otto Hartert (1859-1933) began his great work *Die Vögel der Paläarktischen Fauna*

in 1903. He also started with passerines, because “conditions of work and space (not scientific reasons!) induced me to start with the higher forms”. This made a notable contrast to Hartert’s focus on the latest developments at and below the level of genus, so that in effect, like Ridgway, Hartert’s higher classification became one of convenience so that he could focus on other matters. In view of this it is notable that in the fourth part of Volume 1 (1907), he proposed an enlarged Muscicapidae (including Sylviidae, Timaliidae and Turdidae) because he thought there were too many intermediate characters.

Waldron DeWitt Miller (1879-1929), an Associate Curator at the American Museum of Natural History, was interested in the higher categories of birds and studied taxonomic characters such as pterylography, the digestive tract, carotid arteries, thigh and shoulder musculature, plantar tendons and foot structure, amongst others. He was an obvious choice to join the committee for the preparation of the classification to be used for the proposed fourth edition of the AOU Checklist and was appointed to the project in 1924 in association with Frank Alexander Wetmore (1886-1978). They jointly published a classification of North American birds in 1926, but their collaboration ended when Miller tragically died from his injuries, when his motorbike collided with a bus during a field trip; he left much important work unpublished (Lanyon 1995). The checklist came out in 1931.

Alexander Wetmore began his career in Washington, DC, with what later became the National Biological Survey, in 1910, and moved to the Smithsonian Institution in 1920, where he remained, later becoming Secretary and continuing his research there after retirement. His extensive taxonomic and other work covered both living and fossil birds. Through these studies and his work on the AOU Checklist he continued with his interest in the subject of higher classification and extended his investigations to cover the birds of the world. He published his first attempt in 1930, with slight updates in 1934, and reprinted in 1940. Gadow’s classification was the starting point, particularly for the non-passerines. While Gadow recognized only seven families of suboscines, Wetmore listed 16. For the oscines Gadow came up with a list of 28 families based on several sources, but particularly Sharpe, and explained away his choices on the grounds that the fine points of the recognition of families in the oscines were poorly understood and biased towards European birds. This eclectic element found its way into Wetmore’s conservative choices, and his classification, with its slight changes in the later versions, became the standard in museum collections and books, particularly in North America.

James Lee Peters (1889-1952), Curator of Birds at the Museum of Comparative Zoology, Harvard University, for 20 years, began making a card catalogue of the birds of the world in 1923 (Bock 1990). This increasingly complex task led him to decide in the late 1920s that Sharpe’s *Hand-list*, the only currently available world list, was in need of updating. In the introduction to the first volume of his world checklist he noted that the rapid increase in ornithological knowledge supported the need for such a new work. A major contribution to this increase was obviously the great proliferation of new subspecies, now that trinomial nomenclature was widely accepted in spite of lingering opposition in some quarters (Robin 2001). A few authors were particularly active in this regard, such as Gregory Macalister Mathews (1876-1949), mostly writing on Australian birds (Serventy 1950), and Austin Roberts (1883-1948) in South Africa, who also worked on mammals (Brain 1998). However, like others active in various parts of the world at the time, they also produced important reference works, adding to Peters’s concern about updating Sharpe. The other problem with Sharpe’s list was that he remained a strict adherent of binomial nomenclature, although he is said to have remarked jokingly that “three names were too many to put on a specimen label”. As a result, Sharpe listed as species birds that had been named as subspecies, even if he agreed the taxa were not species as he understood them. Peters followed Wetmore’s 1930 classification for all non-passerines and the first part of the suboscine passerines in the seven volumes he completed of his *Check-List of Birds of the World* (1931-1951) before his death.

Erwin Stresemann (1889-1972), based in Berlin, was the most influential ornithologist in Europe in his day, both through his many publications and his editorship of major journals (Haffer 2000). He was invited to prepare the *Aves* volume of Küenthal and Krumbach’s *Handbuch der Zoologie*, which was published in eight instalments (1927-1934). This work was highly praised in its day, but not as widely used as it deserved to be (Haffer 1994). He based his classification on Fürbringer and Gadow but took a more conservative approach to deciding the rankings. Of the 20 orders of living birds recognised by Gadow, Stresemann recognised 48 (extended to 51 in 1959). Similarities and differences with Wetmore (1930) in the oscine passerines, for example, reveal Stresemann’s classification to be as eclectic as Wetmore’s. Thus, the higher classification of birds had merely become one of practicality with no real progress since the 1890s, and in the view of some workers, studies of higher categories of birds



had run their course. The emphasis of systematic ornithology in the early twentieth century was not only focussed on species but on the rise of trinomial nomenclature, with a need to reclassify genera and species. The 1930s and 1940s saw the beginnings of genetic studies and the “new systematics”, with an emphasis on speciation and the species concept (Haffer 1992; see also Eck 1998; Johnson *et al.* 1999). As a result, much was done to bring order to taxonomy at and below the level of genus. Also, through the 1930s and 1940s various anatomical studies were undertaken and, as was seen earlier in the century, some higher classification details were clarified.

### *The third wave: phylogeny and biochemistry (since 1951)*

Ernst Mayr, the most famous ornithologist at the beginning of the twenty-first century, and Dean Amadon, proposed a new classification of birds in 1951. This grew from the various reports on attempts to work towards a natural arrangement of the higher categories of birds developed progressively through various family and group revisions. The inspiration for these studies was the recent arrival from England in the early 1930s of the world-famous Rothschild Collection, and its incorporation into the general collection of the American Museum of Natural History, New York. However, although presenting a revised classification, they also sought to avoid unnecessary changes to the earlier classifications of Wetmore and Stresemann. In the passerines the most notable changes were the recognition of the enlarged Muscicapidae, as proposed by Hartert, and the rearrangement of the sequence of oscine families by putting the crows and crow-like birds last. Both Wetmore and Stresemann had placed the New World nine-primaried groups of finches and their allies last. Later in 1951, Wetmore revised his classification in view of the increasing number of anatomical and other studies. He retained the “finches last” sequence of oscines (see also Friedmann 1955). Mayr (1955) reviewed recent examinations of anatomical characters used to work out the relationships of some of the oscine families. He disagreed with some of the conclusions in this “newly awakened interest in bird anatomy and bird phylogeny” but, while demonstrating that oscine passerines were not as anatomically uniform as once believed, he also cautioned against how these findings could be interpreted.

Mayr’s focus on the classification of the passerines had increased in importance when his move from New York to Harvard University in 1953 meant that he became responsible for the continuation of the world checklist begun by Peters. As with the old British Museum *Catalogue*, the amount of work required was too much for one person, so a number of ornithologists contributed to the remaining volumes, the last published in 1987. At the Eleventh International Ornithological Congress in Basel, Switzerland, in 1954, a committee was formed with the purpose of achieving some sort of consensus on the contentious issue of the sequence of oscine families. A stated aim was for the benefit of editorial standardization. In developing a classification, the phylogeny of the families needed to be considered, even if it was compromised for uniformity. Mayr & Greenway (1956) published the results, with the sequence putting the crows last, as preferred by European ornithologists (Mayr 1975).

Proving that the classification and sequence of the oscine families remained a controversial issue at the time, support for the “finches last” sequence soon followed (Wetmore 1957; Amadon 1957; Delacour & Vaurie 1957). Mayr (1958) defended the “crows last” sequence and restated the argument that, while these alternative systems were stimulating, the issue remained that in journals and non-taxonomic works one would be searching for a particular family at the beginning, middle or end of the sequence of oscines. As a result the “crows last” arrangement was subsequently adopted for the Peters checklist volumes (Mayr & Greenway 1960; see Bock 1990). In his last world classification, Wetmore (1960) discussed such issues but kept the finches last.

Stresemann (1959) reviewed what he considered to be the unsolved problems of avian systematics. He commented on recent work both favourably and critically, particularly the recent attempts by René Verheyen to find a whole new classification of birds based on a numerical analysis of skeletal characters; like some earlier classifications, this method threw up anomalies and inconsistencies and offered little of lasting use. On the relationships of the higher categories of birds it seemed reasonable then for Stresemann to think that these were largely unknown, if not unknowable, as he assumed that all sources of information had been exhausted. In a review of bird classification, Robert Storer (1960) discussed such problems, too, and adopted an eclectic classification drawing from recent work and placing the finches last in the oscine sequence. Unlike Stresemann, Storer thought that there were still new fields offering evidence for the relationships of the higher categories, noting comparative behaviour and protein chemistry as two promising fields; he again reported on new developments in 1971.



Charles Sibley began working in 1957 at developing techniques for comparing avian proteins by electrophoresis as a way to understand the genetics of hybrid populations. He also found that the electrophoretic patterns based on comparing egg-white proteins offered promise for understanding the relationships of the higher categories of birds (Sibley 1960). With further developments and improvements in techniques he provided new evidence in two major reviews (Sibley 1970; Sibley & Ahlquist 1972). By 1973 the limitations of these techniques were apparent, and he moved to new developments in DNA hybridization methods (Sibley & Ahlquist 1990; see also Corbin & Brush 1999). Over the next two decades, while new classification details were proposed, as new studies on various groups were undertaken, DNA hybridization emerged as an important research tool for interpreting taxonomic relationships.

Willi Hennig, an entomologist, introduced a new classification system, phylogenetic systematics, in 1950, but only when he revised and published his work in English in 1966 did the potential of his ideas gain wide influence. The system was based on the branching of lineages, thus renamed cladistics (or cladism). Cladistic analysis of characters requires their separation into ancestral (plesiomorphic) and derived (apomorphic) characters. To determine branching points in the phylogeny, it is necessary to trace backwards the uniquely derived characters (synapomorphies). Cladistic classifications could be constructed exclusively on the basis of branching points, and the method proves to be useful for reconstructing phylogenies. Groups sharing the same synapomorphies are sister groups. The results of cladistic analyses can be represented diagrammatically by cladograms. These show series of dichotomies marking the successive splits of the phyletic lines (Wiley 1981). Hennig's system attracted a large number of followers, with many changes and refinements to the system as originally envisaged by him. Cladistic methods have also attracted critics over the years. The two other taxonomic methodologies widely used are traditional or evolutionary methodology, the basis of earlier classifications, and numerical phenetics, which has been most effectively applied to unravelling confusing groups of genera and species (Mayr 1982).

Hans Wolters was the first to apply a phylogenetic approach to a list of the world's birds (Wolters 1975-1980, 1983), and he provided a complex but valuable higher classification to accommodate them. It is also notable for the first extensive application of subgenera, an area that had been of special interest to Wolters and several of his colleagues in Germany over the previous 50 years in particular. Joel Cracraft (1981) also developed a phylogenetic classification of birds, but only as a cladistic analysis of the higher categories. While Cracraft's hierarchies of higher classification offer new interpretations, the overall sequence was still the traditional one of Wetmore, ending with finches last. There were anomalies in how some of the details were worked out (Olson 1982; Sibley & Ahlquist 1990) and some of the problems raised by Cracraft's cladistic analysis have been investigated in later studies (e.g. Raikow 1987). Cracraft has continued to develop his ideas towards a revised classification of birds (e.g. Cracraft & Feinstein 2000).

Walter Bock (1982) worked out a traditional, evolutionary classification, but specialized morphologies compromised the attempt at a phylogeny (Sibley & Ahlquist 1990). For the passerines, the crows and crow-like birds were placed last in the oscine sequence. Storrs Olson (1985) offered a different classification based on a review of fossil birds, dividing bird groups into "basal" and "higher" (including passerines) landbird assemblages and a waterbird assemblage. In devising this arrangement, the assumption was that birds originated on land, and the assemblages are sequenced by degrees of specialization. Karel Voous (1985) updated the classification used in the 1964 *Dictionary of Birds*, which was based on Peters (1931-1951) and Mayr & Greenway (1956), for the revised version of *A Dictionary of Birds*. While Voous maintained a conservative approach to the classification, his modifications meant that it was another eclectic classification.

After publishing numerous papers on the findings based on DNA-DNA hybridization techniques (e.g. Sibley & Ahlquist 1985), Sibley and his colleagues, particularly Jon Ahlquist, exhibited a large wall chart of their conclusions for a world classification of birds at the Nineteenth International Ornithological Congress in Ottawa, Canada, in 1986. This chart attracted much attention and was dubbed "The Tapestry". It was subsequently published (Sibley *et al.* 1988; see also Mayr 1989, Sibley 1989). Sibley's important role in developing new understandings of the higher classification of birds reached its climax in 1990. At the Twentieth International Ornithological Congress in Christchurch, New Zealand, in December 1990, he launched two hefty volumes totalling some 2000 pages, making a *fait accompli* of his work on DNA. In these pages, there were a review of classifications, the interpretation of his DNA data (Sibley & Ahlquist 1990), and a world list of birds based on it (Sibley & Monroe 1990, see also 1993). In a second printing of Sibley & Ahlquist (1990), Sibley (1995) reviewed the

immediate aftermath of the book. He noted: "I have estimated that at least 75 percent of our conclusions agree with traditional ideas... The studies cited above show that independent research has confirmed additional pieces of The Tapestry, in spite of criticisms about the technique and our methods of analysis." Whether one agrees with all or some of the findings or not (e.g. Harshman 1994), Sibley's works, mostly with Ahlquist, have been most significant stimuli to further investigations on the higher classification of birds. Genetic studies have proved to be the most fruitful, particularly when used in conjunction with other data, such as morphology, biogeography and the fossil record (e.g. Cracraft 2001; Feduccia 2003). The pace of research has continued to increase (reviewed in Mindell 1997) and the techniques applied have also been refined and diversified (e.g. Helbig & Seibold 1999; Lovette & Bermingham 2000, 2002; Cicero & Johnson 2001). There is now an increasing focus on nuclear DNA, which apparently offers more consistent results (e.g. Ericson *et al.* 2000, 2002b; Shapiro & Dumbacher 2001; Irestedt *et al.* 2001; Barker *et al.* 2002). However, while the development of techniques such as comparing the sequence data of mitochondrial DNA and nuclear DNA have demonstrated congruity in phylogenetic analyses, conflicting data also have been found (e.g. Johnson 2001; Irestedt *et al.* 2002).

One consequence of the arrival of the new classification has been its impact on regional works, such as checklists and field guides. While a traditional classification has been retained by some (e.g. in Europe, Beaman 1994, Svensson & Grant 1999; and in Africa, Dowsett & Forbes-Watson 1993, Stevenson & Fanshawe 2001), the new classification has also been adopted in its entirety (e.g. in Asia, Inskipp *et al.* 1996, Robson 2000). In other cases, new, eclectic classifications are emerging, notably with the passerines (e.g. in North America, AOU 1997, 1998; in South America, Clements & Shany 2001, Ridgely & Greenfield 2001; in Australia, Christidis & Boles 1994, Higgins *et al.* 2001). Mayr & Bock (1994) argued that the standard (i.e. traditional) classification in wide use should be followed. After discussing their views, they concluded: "It may be best to wait until many, widely accepted changes have accumulated and then to undertake a single major alteration of the standard avian classification and sequence at one time." As Sibley (1995) pointed out, his findings were being increasingly supported. In the nine years since Mayr & Bock defended tradition, i.e. stability, evidence of the wide acceptance of changes, either agreeing with or refuting Sibley & Ahlquist (1990), is certainly accumulating.

A sampling of recent findings within the passerines indicates that:

- the southern origins of Oscine passerines is supported, with the New Zealand Wrens (Acanthisittidae) representing an ancient relict forming a sister group to all other passerines (Ericson *et al.* 2002a; Barker *et al.* 2002);
- the monophyly of the two clades of New World suboscines is gaining clarification (Prum *et al.* 2000; Irestedt *et al.* 2001; Birdsley 2002), but with recent evidence demonstrating that two genera traditionally placed in Rhinocryptidae probably represent a separate family of uncertain relationships, the newly proposed Melanopareidae (Irestedt *et al.* 2002);
- the lyrebirds (and probably scrub-birds) are the most basal group of the Oscines (Ericson *et al.* 2002b);
- the Corvida of Sibley & Ahlquist (1990) is not monophyletic, but their Passerida is (Ericson *et al.* 2002a; Barker *et al.* 2002);
- Madagascan taxa traditionally assigned to Pycnonotidae, Timaliidae and Sylviidae represent another ancient radiation comparable to the Vangidae, which also includes *Newtonia* (Fjeldså *et al.* 1999; Cibois *et al.* 1999, 2001; Yamagishi *et al.* 2001);
- various New World nine-primaried Oscine taxa traditionally considered as finches prove to be tanagers and *vice versa* (Burns 1997; Seutin & Bermingham 1997; Groth 1998; Klicka *et al.* 2000; Loughheed *et al.* 2000; Garcia-Moreno *et al.* 2001; Sato *et al.* 2001; Yuri & Mindell 2002), while the Old World genus *Emberiza* is not a recent offshoot (Grapputo *et al.* 2001);
- similar outcomes have been found with taxa traditionally considered thrushes or flycatchers, but in some cases their relationships apparently lie elsewhere (Pasquet *et al.* 1999, 2002; see also Sorensen & Payne 2001); and
- taxa traditionally placed in Paridae, Aegithalidae and Sylviidae are closely related (Sturmbauer *et al.* 1998).

It is now 13 years since the Sibley & Ahlquist classification stirred and stimulated a rapidly increasing field of investigations on the phylogeny of birds. The search for a natural system is alive and well.



### *Summary: all of the above and more to come*

This survey has been generally chronological and of necessity brief, and some well-known names have been omitted for this reason. The objective has been to demonstrate the multi-faceted nature of how naturalists, philosophers, anatomists and ornithologists have used their studies of birds to find how they can be grouped and classified in the quest to find a “natural system” or, more correctly, a classificatory system. The quest to broaden our understanding of the evolution and diversification of birds around the world continues. The limitations of space have principally confined this survey to passerines: their general similarity has made their classification seem deceptively simple but there can be some devil in the detail. We started out with a broad canvas, eventually leading to a tapestry, now being rewoven. Just when we think we know what the relationships of various families or groups appear to be, something new comes to light. However, while various problems appear clearly to have been resolved, others continue to reveal surprises.

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## *Introduction to Volume 8*

The beginning of the passerine volumes seems to us the ideal moment to incorporate a number of improvements in response to requests from readers and reviewers.

We are delighted to have been able to count on the concentrated efforts of several expert photographers who have been taking photographs specifically for HBW. The array of remarkable photographs in Volume 8, for relatively poorly known families, is testament to the expertise of these photographers, and we hope very much to be able to continue and expand this system for future volumes, in order to be able to provide representative selections of photos for all bird families.

Several reviewers have been urging us to adopt a clearer system of highlighting the accepted English name of photographed birds in the captions, so that the name can be picked out more quickly and more easily. We appreciate that for some readers this may have caused a certain amount of difficulty, so starting with the present volume, we have adopted a slight but important modification. In fact, the English name of the depicted species has always been included in each caption, but now the name is highlighted in bold. We believe that this will make identification much easier and simpler, especially for those readers who are not particularly familiar with the scientific names. Note that when two or more photos appear in a collage with a single caption, the species are always mentioned in logical order, e.g. top to bottom, or left to right; also, the highlighted names always appear in the text of the caption in the same sequence as the scientific names in the credits at the foot of the caption. A further improvement in response to the pleas of reviewers is the incorporation of the photo references into the Index. Thus, all photos are now listed by page number in the Index, using italics. Each photo is cited under the species' scientific and accepted English names.

In order to make the distributions depicted on the maps somewhat clearer and more precise, major rivers have now been added in to the base maps. It is hoped that these should be particularly useful in the interiors of large continental landmasses, where there is no coastline to act as a guideline.

Again in response to requests, in the References of Scientific Descriptions at the back of the book, each taxon is named alongside the page number of the publication in which it was first described. Thus, the exact page number for each taxon is quite clear.

Volume 8 exceeds all previous volumes in terms of the amount of previously unpublished information included. Part of the reason for this is the fact that most of the families and species covered in this volume are exclusively Neotropical. Until recently, the South American avifauna was very poorly known, but the amount of new and important information to have emerged in recent times is probably far in excess of the equivalent for other regions. A reflection of this is the very high proportion of new species discovered (rather than split) in the last 25 years that hail from this continent. All new information of significance incorporated into the HBW texts is, as ever, referenced in the Bibliographies as "unpublished notes", "M S" or the like. Also, because there is no comprehensive compendium on the biology of Neotropical birds to date, it has been reckoned appropriate to permit the inclusion of more detail in the species

accounts than has previously appeared for other, generally better documented families. Having stressed the significance of this volume for the Neotropical families involved, we would also like to commend to the reader the equally excellent work produced by the authors of the three Old World families in the volume!

There are a few brief observations to be made on the texts of some of the individual families in this volume, mostly on behalf of the authors in question. The authors of *Thamnophilidae* wish to stress that, in the species accounts of that family, listed lengths for each species are taken from unstretched museum specimens. For weights, they cited a range that excludes obvious extremes; the principal source of unpublished weights is the collection of the Louisiana State University Museum of Natural Science. Also, in the Food and Feeding sections of this family, they have incorporated large amounts of unpublished data, some of it quantified, some of it not, relating mainly to foraging behaviour, micro-habitats and nest descriptions. Many of these data are their own, but they also obtained unpublished information from a number of skilled, careful field ornithologists. The result is that many entries that would otherwise have read "Nothing known" are now filled with extensive, often highly detailed, descriptive information as well as previously unpublished quantified data. In an attempt to make clear which sections are drawing heavily upon unpublished sources, the section opens with a statement such as "Little published" or "Nothing published". Contributors of unpublished data are flagged by a "2003" entry in the bibliography of species accounts that can be cross-referenced to an entry in the General List of References under a entry such as: "Notes on thamnophilid antbirds". The author of *Furnariidae* considered that for this family it would be particularly useful to include the "official" habitat categories of each species as designated by Stotz *et al.* (1996). To this end, the Habitat sections of the species accounts in this family open with these designated categories, before proceeding to more specific remarks about the species in question.

As ever, the page immediately before the initial page of the first family in an order is given over to a summarizing "order page". Given the huge number of families involved in *Passeriformes*, readers will not be surprised to see a slightly modified format for this order. This modified style has been designed with the intention of keeping everything as clear and uncluttered as possible, while retaining all the families on a single page, and without straying too far from the lay-out of order pages in previous volumes. On the order page, the families covered in the current volume are highlighted. The intention is to repeat this order page at the beginning of each new volume, with the relevant block of families highlighted. As publication of the final volume in the series is still some years away, the editors would like to stress that a few minor modifications may yet be made to this sequence as the series progresses. However, it is confidently expected that any such changes will be few and far between.

At the petition of some authors, for the first time certain important sound recordings have been included in the reference list. This is a matter that needs a certain amount of control, mainly to avoid the inclusion of a mass of informal and not readily obtainable recordings, but it is hoped it will be possible to continue and perhaps extend this system, with great care, in forthcoming volumes.

One general point on HBW norms that we should like to stress to readers is that it is important to take the Distribution sections in conjunction with the Taxonomy sections. HBW distributions aim to be concise, so that the reader can see at a glance where a particular species or race occurs. This is, of course, particularly relevant for polytypic species: at the species level, a glance at the map immediately gives a general idea of the distribution, which can then be complemented by further details in the text, but to check subspecific distribution, the map must necessarily be taken in conjunction with the text. In order to avoid subspecific distributions becoming too long and involved, and difficult to interpret, relevant taxonomic details (e.g. intergradation, clines, etc.) are normally dealt with in the Taxonomy section, as there is more ample scope here for lucid explanation, without the details becoming entangled in the midst of the written distribution. For example, if we look at the case of *Philydor ruficaudatum* on page 335, we see in the Taxonomy section that there is a very complicated situation involving extensive intergradation of all three of the accepted races; that the perceived variation will probably prove to be clinal; that further study and analysis is required; and that the species is likely to end up being considered monotypic. To include all of these taxonomic details that are relevant to distribution in the midst of the Distribution would lead to long, involved, confusing statements, and a good deal of repetition, so in HBW such comments are normally restricted to the Taxonomy section.

For the present volume, we are delighted to be able to include a most interesting foreword on the history of bird classification by Murray Bruce. This essay provides a wealth of details behind the lives and work of some of the great figures in the history of ornithology, highlighting their most important contributions towards the development of ornithological research and thought.



With Volume 8, HBW starts its coverage of the Passeriformes. As this single order will occupy all the remaining volumes in the series, we think that a few introductory remarks may be appropriate, mainly concerning the general features of the order, a few selected details regarding the history of its treatment to put the HBW treatment into perspective, and finally a few brief notes on the internal division that has been adopted herein. Up to now, no order has spread from one volume of HBW to the next, with the result that most of the general features of each order are readily apparent from the texts, plates and photographs pertaining to each order, as well as being discussed to some degree in different families. It is worth noting that, in terms of number of families recognized, the largest order covered to date (by some considerable distance) has been the shorebird order, Charadriiformes, with 18 families. With nigh on 100 families planned for Passeriformes, it seems appropriate to provide a brief summary of some relevant features before embarking on this enormous block. For far more detailed coverage (and details of references) of the historical side, please see Murray Bruce's foreword.

Amongst the 30 or so orders normally recognized within the Class Aves, the passerines (Passeriformes) stand out as being the most advanced and by a long way the most diversified in terms of species richness. Whichever species concept is preferred (see Haffer, HBW 4, pp. 11-24), whichever individual classification is adopted, the passerines invariably comprise more than half the known species. Glancing at higher ranks, over during the last century or so, in most classifications, over half of all bird genera, and usually almost half of all bird families recognized, are passerine. It should be underlined that the business of both familial and generic limits are rather grey areas, ruled by decisions that tend to be somewhat subjective and often rather arbitrary, largely because these are purely human concepts, invented for ease of classification, and which presumably have no significance whatsoever to the birds themselves. For example, in highly simplified terms, we assume that a Eurasian Blackbird (*Turdus merula*) on seeing and hearing a Mistle Thrush (*Turdus viscivorus*), a Eurasian Robin (*Erithacus rubecula*) and a Common Wren (*Troglodytes troglodytes*) does not see the second of these three as being more closely related to it than the third and less closely than the first, but essentially sees all three as "non-Blackbirds". Returning to the diversity of the passerines, and in spite of the inevitable subjectivity, all the aforementioned statistics are clear evidence of the degree of perceived diversity within the order Passeriformes. In practical terms, one of the more obvious outcomes of this is that all taxa within the Class Aves are regularly referred to as either "non-passerine" or "passerine"; virtually any series of books or papers on birds that is divided into two or more parts is likely to have a split between parts coinciding with the switch from non-passerines to passerines.

The passerines are sometimes referred to as the "perching birds", and to this end their feet are well adapted to perching with four forward-pointing toes all on the same plane, with a backward-facing hallux in opposition. The other vernacular name for the group, more precisely referring to the oscines, is "songbirds", and again this is reflected in the highly distinctive morphology of the syrinx.

The passerines are found worldwide, in virtually all habitats except around the poles. Apart from a few wetland ecotypes and some oceanic islands, passerines tend to be the order represented by the largest number of species in the avifauna of almost any site in the world. They are frequently the commonest in terms of absolute numbers of individuals too. Compared with most non-passerines, the passerines are generally rather small-sized birds, with many fitting the "tiny" category, whereas the largest are some of the crows (Corvidae), only rather moderate-sized in the context of the non-passerines. The passerines include many of the "tamest", commonest and most easily observed species throughout the world, some of which are amongst the species best adapted to man-made environments; yet, the order also contains some of the most determined skulkers of all, species that are seen only very rarely, if ever, without the aid of tape-recording playback.

Despite the large number of species recognized, the passerines form a rather uniform assemblage, and it is quite some time since there was any serious dispute as to whether or not any particular taxon should or should not be placed within this order. Of course, the same can also be said about most other bird orders, and the vast majority of cases of disputed assignment to order concern disagreement essentially regarding ordinal limits: whether to lump or to split in particular cases — essentially the same difficulty already referred to above in connection with genera and families. For example, the extant taxa of ratites were commonly placed in four orders during much of the last century, but nowadays most authors prefer to lump them all into a single order, Struthioniformes, and indeed they are sometimes even merged with the tinamou order, Tinamiformes. Very few indeed are the cases of taxa being switched between two "independent" orders, amongst the most striking cases being: the Hoatzin (*Opisthocomus hoazin*), disputed between the Galliformes and the Cuculiformes, and in HBW awarded its own order, Opisthocomiformes; the sandgrouse (Pteroclididae), disputed between the Columbiformes and the Charadriiformes, and likewise in HBW awarded its own order;



and the Plains-wanderer (*Pedionomus torquatus*), traditionally placed amongst the Gruiformes, but now generally considered to belong in Charadriiformes, and treated thus in HBW. An example of the consolidated uniformity in treatment of the limits of Passeriformes can be found in Wolters (1982), who, although he recognized 50 orders and subdivided a large number of the traditionally accepted orders including Anseriformes, Falconiformes, Gruiformes, Charadriiformes, Coraciiformes, etc., nonetheless left the limits of the Passeriformes intact. Traditional views have considered the orders most closely related to Passeriformes to be Coliiformes, Coraciiformes and in particular Piciformes.

In the early stages of "modern" ornithology, under 350 years ago, there was no real sign of a passerine group emerging yet in attempts at classification. For example, W. Charleton (1668) had two main divisions of birds, namely the landbirds and the waterbirds. The former were further divided into seven categories, based on food, bathing and singing, but passerines and non-passerines were liberally mixed together through most of these categories, while the Dipper (*Cinclus*) was, not unreasonably, classified amongst the waterbird groups.

Within less than a century, however, the isolation of the passerines was beginning to take shape. In the sixth edition of his *Systema Naturae*, in 1748, Linnaeus recognized six orders of birds, the sixth, Passeres, consisting largely of modern-day passerines, though with the odd pigeon, hummingbird, etc., thrown in, while just a few other modern-day passerines were placed elsewhere, such as crows in his Picae.

Moving the clock on a century or so, G. R. Gray's influential works of the mid-nineteenth century recognized many of the modern-day families, as well as quite a number of what were to become "traditional" groupings, but his subdivision of his Passeres into four groups based primarily on bill-shape still bore little resemblance to modern classifications, and included members of many groups subsequently placed in other orders, including Opisthocomiformes, Cuculiformes, Caprimulgiformes, Apodiformes, Coliiformes, Trogoniformes, Coraciiformes and Galbuliformes, though admittedly these non-passerine intruders were generally quite well bunched together, rather than all mixed up in the midst of the "modern-day" passerines. Gray's classification, however, still maintained in close proximity several groups now considered unrelated, and only superficially similar due to their similar habits, notably: swallows and swifts; Old World flycatchers and tyrant-flycatchers; and sunbirds, honeycreepers, hummingbirds and honeyeaters.

Gray's list was perhaps the last really important one not to see the passerines united in their own order without any "foreign bodies" included. Important detailed studies had meanwhile been in progress, particularly in Germany, where C. L. Nitzsch (1840) analysed pterylosis in different groups; by 1829 Nitzsch had already come to the conclusion that the swifts actually belonged alongside the hummingbirds, with no close relation to the swallows at all. By 1834, C. W. L. Gloger, based on studies of the syrinx, established the unity of the passerines, calling for their separation from all of the non-passerines that had still been placed alongside them. Also of great significance at this time was the work of J. P. Müller, who likewise studied the structure of the syrinx, his results and conclusions being published in 1847 in German, with a translation into English in 1878. He established the major subdivision of the passerines into two clear groups, the suboscines and the oscines, based on the simpler syringeal morphology of the former. This division stands to this day, having been supported by a large number of subsequent studies, in more recent times including various biochemical analyses.

By the latter part of the century, and the second International Ornithological Congress in Budapest, in 1891, many advances had been made so that R. B. Sharpe's proposed sequence of passerines now bore a considerable resemblance to the classifications in vogue during most of the twentieth century, except that it was back-to-front, the families being listed from what was considered the most advanced to the most primitive. Over the following years Sharpe worked in conjunction with many of the most eminent ornithologists of his day to produce his *Hand-List of the Genera and Species of Birds*, the passerines appearing between 1901 and 1909 in Volumes 3-5. This work probably represented a reasonable compromise of the main views current at the time. In many details, this list was similar to his 1891 proposal, but the sequence was now more or less inverted. Its major features can be detected throughout all the classifications that dominated the ornithological world right up until the advent of the DNA classifications in the latter part of the twentieth century.

Over the following century or so, in traditional classifications treatment of the suboscines remained fairly conservative, but not so the oscines, in which three large, informal blocks of families were normally recognized: the Old World insect-eaters and relatives; the crows, birds-of-paradise, and associated families; and the New World insect-eaters and finches. The various systematists interchanged the positions of these groups in accordance with their views, but the groups themselves tended to remain largely intact. In different parts of the world, different sequences tended to gain pre-

ponderance, the Basel sequence with the crows last dominating in Europe, and the Wetmore sequence with the finches last leading the way in America (see Bruce, HBW 8, p. 32). Ultimately, the latter can be said to have triumphed among traditional classifications, and this is the sequence that forms the backbone of the HBW passerine list. Round the framework of these three major groups within the oscines, the other "unattached" families were variously positioned. The larks (Alaudidae) and swallows (Hirundinidae) formed two independent entities in themselves in having distinctive syringeal morphological features, and these two families have usually been placed at the beginning of the oscines. Additional loose groupings that can be detected in most twentieth-century classifications include the Old World nectar-eaters, the shrike group, and the tits and creepers.

The last part of the twentieth century has witnessed a huge upheaval in ideas, chiefly through the DNA-DNA-hybridization work of C. G. Sibley and J. E. Ahlquist. They proposed dividing the oscines into two major groups, Corvida and Passerida, and realigning many hitherto accepted relationships. How many of their conclusions will stand the test of time remains to be seen, but several of their findings have already received additional corroboration, and some have been adopted into classifications. Amongst the most important of their results would appear to be the significant position of Acanthisittidae at the base of all the passerines, representing the last survivors of an ancient lineage; and also the idea that several Australasian endemic families are much more closely related to each other than they are to the more northerly based families with which they have long been associated. Sibley and Ahlquist's work has stimulated a tremendous upsurge in interest in avian taxonomy in general, with genetic studies now being carried out on numerous groups all round the world. New results are being published with increasing frequency, and amongst the most exciting is the evidence of an ancient Madagascan lineage that is now also emerging. Certainly, it is true that different biochemical studies have produced contradictory results in several cases, but with increasing amounts of research being carried out, and refinements in techniques, it should prove possible work ever closer towards the "natural" classification that has so long been sought, and has at various times appeared quite unattainable.

As already stated, on the basis of syringeal morphology two well-marked groups can be seen within the passerines, namely the suboscines and the oscines. The suboscines generally have much less complex vocalizations than the oscines, and they show very unusual anatomy of the inner ear; the vast majority of species (some 1170 in about 12 families) are restricted to the Neotropical Region, with just some 50 species in three families occurring in the Old World tropics, mainly in South-east Asia. In contrast, the oscines are the typical songbirds, generally considered the most advanced of all birds, and characterized by their complex songs; they occur almost worldwide.

The suboscines have frequently been treated as a sole suborder, or even, on occasion, order (Tyranniformes), but such treatment appears to conceal some significant differences. The Old and New World groups have usually been recognized as not particularly closely related, but the pittas (Pittidae) were long left floating around in no man's land, until they have now been recognized as belonging relatively close to the broadbills (Eurylaimidae) and the asities (Philepittidae) in an Old World suboscine assemblage. Whether the New World taxa should be placed in a single suborder or in two remains controversial, but the current trend appears to be heading back towards two groups, Furnarii and Tyranni, with tracheal and tracheo-bronchial syringes respectively; this is the option adopted in HBW.

The suboscines provide a good example of one of the main problems besetting the classification of the passerines, namely where the limits should be drawn between the different families. Pittidae is the only member of the group which seems to have undisputed family limits. For the others, various authors would advocate treating: the asities as merely a subfamily of the broadbills; alternatively, the asities as forming two separate families, Philepittidae and Neodrepanidae; the woodcreepers (Dendrocolaptidae) as a subfamily of the ovenbirds (Furnariidae); the typical antbirds (Thamnophilidae) and the ground-antbirds (Formicariidae) as a single family, Formicariidae, with or without the gnateaters (Conopophagidae); the tapaculos (Rhinopectidae) as two families, with the erection of a family Melanopareidae; the cotingas (Cotingidae), manakins (Pipridae) and tyrant-flycatchers (Tyrannidae) as a single family; or, alternatively, their subdivision into more than the three families accepted in HBW, with the recognition of such families as Phytotomidae, Oxyruncidae, Rupicolidae, Tityridae, etc.

Although the difference between oscines and suboscines is clearly defined, there are two small Australasian groups that do not fit well into either section. To emphasize their distinctiveness they are sometimes awarded separate suborders, Acanthisittae and Menurae, as is the treatment in HBW. The first comprises only the New Zealand wrens (Acanthisittidae), a group now reduced to just three species, one of which is almost certainly extinct. This group shows unique features in its ear and muscle morphology,



as well as an unusual bronchial syrinx without intrinsic muscles. It has long proved a problem taxon to systematists searching for its closest relative, but very recently different workers (Ericson *et al.* 2002, Barker *et al.* 2003) have arrived at the same conclusion as Sibley and Ahlquist, namely that this family is a relict of primitive representatives of the passerines, and may be the sister taxon to the entire rest of the order. For this reason there are good arguments for isolating this family, and perhaps for placing it first within the passerines, though, with the ink is still wet on these conclusions, for the purposes of HBW it has seemed better to place this group tentatively between the suboscines and the oscines, near its traditional position where most readers would expect to find it, and in its own suborder to emphasize its probable significance in terms of the genealogical history of the whole order.

The second suborder intercalated between the suboscines and the oscines is Menurae, consisting of the lyrebirds (Menuridae) and the scrub-birds (Atrichornithidae), both exclusively Australian in distribution. Both have slightly less complex syrinx morphology than found in the oscines, for which reason their taxonomic placement has long hovered between the two major passerine groups, though it is now generally agreed that they belong alongside the oscines. K. H. Voous (1977) suggested that, on the basis of their syringeal morphology, the lyrebirds and scrub-birds were actually the "true suboscines", and he proposed the replacement name "deutero-oscines" for the groups traditionally known as "suboscines", but this proposal has never really caught on, and the name "suboscines" is still applied more or less universally to species herein placed in the suborders Eurylaimi, Furnarii and Tyranni.

It may be of interest to note with regard to these first five suborders that, apart from an extensive overlap between the questionably separable Furnarii and Tyranni and a marginal overlap between a few species of Eurylaimi (pittas) and Menurae, they are otherwise geographically exclusive. The suspected Gondwanan origin of the passerines certainly receives some support in the fact that these pre-oscine suborders have distributions almost entirely restricted to the lands of the ancient southern supercontinent. In accordance with this view, the oldest passerine fossils known to date are fragments found in Queensland, Australia, dating back to the early Eocene, some 50 million years ago, whereas the oldest known oscine remains come from France and date to the Upper Oligocene, some 30-25 million years ago. Nevertheless, the New Zealand wrens are now reckoned to have broken away from the main passerine lineage quite some considerable time earlier, about 85-82 million years ago, during the Cretaceous.

Whether the Passeriformes are subdivided into just two suborders or anything up to seven (Wolters, 1982), the number of taxa allotted to the oscines remains much the largest, comprising about 80% of the passerine species, and still very close to half of all bird species. The overall structural homogeneity of birds in this suborder has been one of the greatest stumbling blocks thwarting attempts to produce a "natural" classification, as the differences visible must often be put down to convergent evolution, with the result that very similar-looking species may not be particularly closely related, whereas other apparently rather diverse forms may be close relatives. The difficulty in establishing widely agreed family limits has consistently proved a major problem, and indeed in 1880 led P. L. Selater to observe that all oscines were so closely related as essentially to be equivalent to a single family in the context of other birds groups. Historically, the main argument against this has been one of practicality: a single family of some 4500-5000 species would be quite unmanageable as such, and would undoubtedly complicate various different forms of research in various different ways. Thus, we return to the eternal conflict of the search for the truly "natural" classification, the impossibility of depicting it in linear form, and the overall importance for the progress of research in having an operable working system (see Bock, HBW 2, pp. 13-15). Efforts have generally been combined towards a form of compromise, in producing a list as close to reflecting true relationships as deemed reasonably possible, but within a practical framework.

As already remarked, the definition of family rank and limits has proved particularly difficult within this order. Almost any of the main groups have been the object of much debate regarding the most appropriate family limits to be applied. Thus, for example, in the Basel sequence, following E. Hartert, the family Muscicapidae was considered to include not only all other Old World flycatcher families, such as Monarchidae, Rhipiduridae and Platysteiridae, but also the other three large families in the assemblage, Turdidae (thrushes), Timaliidae (babblers) and Sylviidae (warblers), as well as their various derivatives, or apparent derivatives, such as Picathartidae, Paradoxornithidae, Pomatostomidae, Orthonychidae, etc. Similarly, an outsized Emberizidae has at times been recognized, including several other families such as Thraupidae (tanagers), Vireonidae (vireos), Parulidae (New World warblers), etc. Such enormous families at times present severe practical complications to scientists, and may not be any closer to a true reflection of relationships anyway. HBW prefers to follow a narrow family concept, tending to emphasize the differences rather than the similarities.



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The French and Spanish names come from the same sources as in previous volumes; our thanks to Normand David and Eduardo de Juana and their respective associates for dealing with any problems swiftly and efficiently. The accepted list of German names is still being extensively revised, but we have been fortunate to be supplied with the most up-to-date list currently available by Christoph Hinkelmann, who also dealt very ably with any questions. Our thanks, too, to Peter Barthel for putting us in contact with Christoph.

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Finally, we should like to say a few words about the change in the editorial line-up. After 14 years with the project, Jordi Sargatal has decided that now, with the switch from non-passerines to passerines, is the right moment for him to step down in order to be able to concentrate more fully on his important conservation work throughout Catalunya. Nevertheless, he will remain closely attached to HBW from his position on the Editorial Council of Lynx. We thank Jordi for his dedication and his effervescent good humour over these years, and wish him all success with his conservation work.

We are indeed fortunate in having Jordi's ready-made replacement on hand in the shape of David Christie. As many readers will know, David has extensive experience in the world of ornithological publications, not least from the 29 years he spent on the editorial staff of the monthly journal *British Birds*. He has been involved in HBW since Volume 3. At the same time, Teresa Pardo has stepped up from her work in previous volumes concentrated mainly on organizing all matters related to bibliography to take on the new role of Assistant Editor. Both Tere and David have already proved themselves to be indispensable members of the team, so we all look forward with renewed confidence to this second half of the project.



# PASSERIFORMES

## — Eurylaimi

- Eurylaimidae (Broadbills)
- Philepittidae (Asities)
- Pittidae (Pittas)

## — Furnarii

- Furnariidae (Ovenbirds)
- Dendrocolaptidae (Woodcreepers)
- Thamnophilidae (Typical Antbirds)
- Formicariidae (Ground-antbirds)
- Conopophagidae (Gnateaters)
- Rhinocryptidae (Tapaculos)

## — Tyranni

- Cotingidae (Cotingas)
- Pipridae (Manakins)
- Tyrannidae (Tyrant-flycatchers)

## — Acanthisittae

- Acanthisittidae (New Zealand Wrens)

## — Menurae

- Atrichornithidae (Scrub-birds)
- Menuridae (Lyrebirds)

## — Oscines

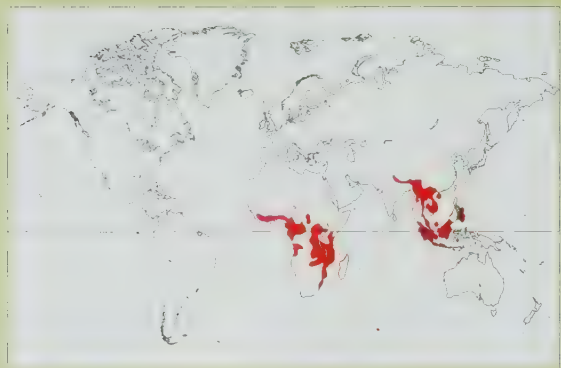
- Alaudidae (Larks)
- Hirundinidae (Swallows)
- Motacillidae (Pipits and Wagtails)
- Campephagidae (Cuckoo-shrikes)
- Pycnonotidae (Bulbuls)
- Chloropseidae (Leafbirds)
- Irenidae (Fairy-bluebirds)
- Aegithinidae (Ioras)
- Ptilogonatidae (Silky-flycatchers)
- Bombycillidae (Waxwings)
- Hypocoliidae (Hypocolius)
- Dulidae (Palmchat)
- Cinclidae (Dippers)
- Troglodytidae (Wrens)
- Mimidae (Mockingbirds and Thrashers)
- Prunellidae (Accentors)
- Turdidae (Thrushes)
- Sylviidae (Old World Warblers)
- Polioptilidae (Gnatcatchers)
- Muscicapidae (Old World Flycatchers)
- Platysteiridae (Wattle-eyes)
- Rhipiduridae (Fantails)
- Monarchidae (Monarch-flycatchers)
- Petroicidae (Australasian Robins)
- Pachycephalidae (Whistlers)
- Picathartidae (Rockfowl)
- Timaliidae (Babblers)
- Pomatostomidae (Pseudo-babblers)
- ...

— ...

- Paradoxornithidae (Parrotbills)
- Orthonychidae (Logrunner and Chowchilla)
- Cinclosomatidae (Whipbirds and Quail-thrushes)
- Aegithalidae (Long-tailed Tits)
- Maluridae (Fairywrens)
- Acanthizidae (Thornbills)
- Ephianuridae (Australian Chats)
- Neosittidae (Sitellas)
- Climacteridae (Australasian Treecreepers)
- Paridae (Tits and Chickadees)
- Sittidae (Nuthatches)
- Tichodromadidae (Wallcreeper)
- Certhiidae (Treecreepers)
- Rhabdornithidae (Philippine Creepers)
- Remizidae (Penduline Tits)
- Paramythiidae (Painted Berrypeckers)
- Melanocharitidae (Berrypeckers and Longbills)
- Nectariniidae (Sunbirds)
- Dicaeidae (Flowerpeckers)
- Pardalotidae (Pardalotes)
- Zosteropidae (White-eyes)
- Promeropidae (Sugarbirds)
- Meliphagidae (Honeyeaters)
- Oriolidae (Old World Orioles)
- Laniidae (True Shrikes)
- Malaconotidae (Bushshrikes)
- Prionopidae (Helmetsrikes)
- Vangidae (Vangas)
- Dicruridae (Drongos)
- Callaeatidae (Wattlebirds)
- Grallinidae (Mud-builders)
- Corcoracidae (White-winged Chough and Apostlebird)
- Artamidae (Woodswallows)
- Pityriaseidae (Bornean Bristlehead)
- Cracticidae (Butcherbirds)
- Paradisaeidae (Birds-of-paradise)
- Ptilonorhynchidae (Bowerbirds)
- Corvidae (Crows)
- Sturnidae (Starlings)
- Passeridae (Old World Sparrows)
- Ploceidae (Weavers)
- Estrildidae (Waxbills)
- Viduidae (Indigobirds)
- Vireonidae (Vireos)
- Fringillidae (Finches)
- Drepanididae (Hawaiian Honeycreepers)
- Parulidae (New World Warblers)
- Cardinalidae (Cardinals and allies)
- Thraupidae (Tanagers)
- Emberizidae (Buntings and allies)
- Icteridae (New World Blackbirds)



Class AVES  
Order PASSERIFORMES  
Suborder EURYLAIMI  
**Family EURYLAIMIDAE (BROADBILLS)**



- Small to medium-sized, arboreal birds, with large head and wide bill, usually slow-moving, many with strikingly patterned plumage.
- 11.5-28.5 cm.



- Afrotropical and Oriental Regions.
- Lowland to montane forest, open woodland, locally extending to cultivation and other more open areas.
- 9 genera, 15 species, 52 taxa.
- 3 species threatened; none extinct since 1600.

### Systematics

Broadbills represent a small family of almost exclusively tropical birds exhibiting a range of distinctive colours and shapes. Their stronghold is in South-east Asia, where they are a characteristic component of the tropical rainforest, usually heard more often than they are seen. Classifying these birds has been another matter entirely. The typical broadbills were originally considered to have affinities with coraciiform birds, such as the rollers (Coraciidae), and with the trogons (Trogoniformes). Moreover, they were even associated with the nightjars (Caprimulgiformes), because of the weight placed on the character of a broad-gaped bill, the obvious source of their English name.

The French ornithologist R. P. Lesson, in 1831, was the first to consider the typical broadbills as representing a separate family. Even so, he placed them in a small division with one other family, which contained only the manakins (Pipridae) and the cotingid genus *Rupicola*, the cocks-of-the-rock, of which the Green Broadbill (*Calyptomena viridis*) was considered to be an Old World representative on the basis of the similarity in the distinctive development of the loreal plumes over the bill. This apparent, superficial relationship of the broadbills with the cotingas, based on a number of other characters, has been noted by several people over the years, but any similarities are now considered to have been independently derived.

By the time the great *Catalogue of Birds in the British Museum* started on passerines, in 1877, anatomical studies had firmly established the broadbills as one of the few families of Old World suboscines, along with the asities (Philepittidae), the pittas (Pittidae) and the New Zealand wrens (Acanthisittidae). When the *Catalogue* volume covering broadbills appeared, eleven years later, additional anatomical investigations had led to the conclusion that there were two main divisions of passerines. These were the Desmodactyli, containing the broadbills alone, and the Eleutherodactyli, in which all other passerines were placed. This arrangement was duly adopted, and for over 80 years the broadbills were therefore set apart in many classifications, briefly as a monotypic order, but usually as a separate suborder at the beginning of the passerine sequence.

During all this activity, it was thought that broadbills were unique to Asia. The African genus *Smithornis*, although it had been known since 1839, was long considered to be just another member of a heterogeneous assemblage of birds broadly known as "flycatchers" and placed together in the family Muscicapidae.

An examination of *Smithornis* by G. L. Bates, however, led to the announcement, in 1914, that broadbills occurred in Africa, and later investigations confirmed this to be the case. Even so, it was not until 1931 that Grauer's Broadbill (*Pseudocalyptomena graueri*) was found to be a eurylaimid, despite possible implications in its generic name; the resemblance to the Asian genus *Calyptomena* had originally been believed to be due to convergence.

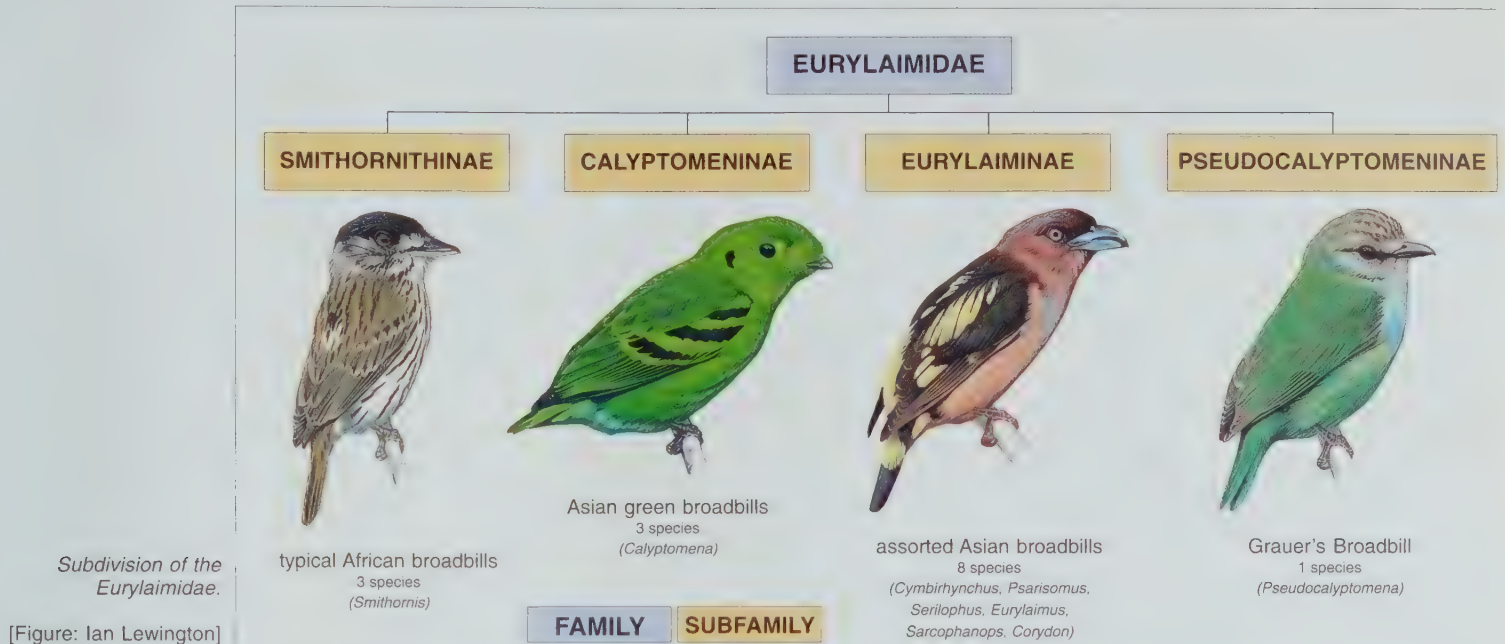
The association of the African broadbills with the Asian ones, however, had already been made as long ago as 1853, when another French ornithologist, C. L. Bonaparte, in a revised classifi-



The **Banded Broadbill** is a fairly typical member of this rather varied family in that it is dumpy with a broad head, large eyes, and a broad, flat, hooked bill, as well as an impressively wide gape. Most of the 15 species are brightly coloured, especially the Asian forms, and several show strikingly patterned plumages. The genus *Eurylaimus* is often expanded to include the two Philippine species that herein have been separated in *Sarcophanops*.

[*Eurylaimus javanicus pallidus*,  
Bala Wildlife Centre,  
Thailand.  
Photo: Tee Lian Huat]





Subdivision of the  
Eurylaimidae.

[Figure: Ian Lewington]

cation of birds, proposed Smithornithinae as a third subfamily of the Eurylaimidae, although with the group still placed near the manakins and cotingas. In the first part of his standard work, published three years earlier, he had first named *Smithornis* and had placed it among the "flycatchers". While Bonaparte was at the time still experimenting with his classification, he kept this particular change, but we shall never know if his proposal was the result of insight or coincidence. A few ornithologists accepted the proposal, but by the time a series of anatomical investigations had been initiated, in 1872, Bonaparte's classification had been forgotten.

Although the anatomists of the late nineteenth century firmly believed that the broadbills represented a unique family, the true picture finally emerged in 1971 through a reassessment of the key anatomical characters by S. L. Olson. In reviewing all five characters used to justify the placement of the Eurylaimidae in a separate suborder, Olson found all to be variable among the

broadbills and within the suboscines; he also concluded from his findings that *Smithornis* was the most advanced genus. In addition, Olson commented on the family's similarities with the cotingids, and once more the broadbills, and the asities, too, were placed near the Cotingidae. On the basis of other evidence, however, he considered the pittas to be unrelated to the Eurylaimidae, whereas, by 1982, preliminary findings from DNA studies had suggested that the broadbills and the pittas were closely related families. Five years later, a study of hind-limb myology by R. J. Raikow concluded that the broadbills, the asities and the pittas are all monophyletic, with the asities the sister-group of the broadbills, and the pittas a sister-taxon of a clade that includes the broadbills and the asities. Raikow also remarked that, considering the high taxonomic rank previously accorded to the broadbills, evidence for the hypothesis of monophyly was surprisingly modest. He regarded the uncertain relationships among the genera of the Eurylaimidae as being possibly due to an "underestimation of parallelism in muscular evolution".

In their major 1990 study of the molecular evolution of birds, C. G. Sibley and J. E. Ahlquist found that the DNA-DNA hybridization evidence agreed well with Raikow's findings. The evidence of divergence between *Calypturnomena* and the other genera examined, namely *Eurylaimus* and *Cymbirhynchus*, was noted. As the data were incomplete, Sibley and Ahlquist deferred subdivision of the Eurylaimidae, although they commented that "it seems probable that a family Calypturnomenidae is separable".

From a phylogenetic analysis of 19 syringeal characters, and the two classical osteological characters discussed by Olson, of the broadbills and the asities, R. O. Prum suggested in 1993 that the broadbills are not monophyletic, but instead consist of four clades showing successively closer relationships to the asities. He also noted that an analysis of his data in combination with the myological characters described by Raikow produced the same result. The sister-group relationships of the clades were expressed by Prum as five subfamilies, the fifth representing the asities, usually treated as a separate family. The subfamily Smithornithinae, considered to be the first distinct lineage of the family, appeared to represent a sister-group to all the others, with Pseudocalypturnomeninae the sister-group to the asities, the latter being treated as the "Philepittinae". The traditional subdivision of the green broadbills as the subfamily Calypturnomeninae was retained. The remainder of the broadbills were placed in the subfamily Eurylaiminae, and were considered to represent the sister-group of the Pseudocalypturnomeninae. Prum acknowledged that the interrelationships of the genera within the Eurylaiminae are yet to be resolved, and he regarded the position of *Corydon* as uncertain because he was unable to include a specimen of it in his study.

Olson had also pointed out that none of the broadbill genera appeared to be particularly closely related to any other, and that



One glance at this **Black-and-red Broadbill** and it is not difficult to appreciate how the family came by its vernacular name! Indeed, the scientific name has the same meaning of "broad bill". Most broadbills are insectivorous and carnivorous and the bill is ideally adapted to such a lifestyle. Bill structure varies within the family according to diet. The Black-and-red Broadbill is mainly insectivorous but it also takes small aquatic animals, such as molluscs and freshwater crabs.

[*Cymbirhynchus macrorhynchos macrorhynchos*,  
Lanjak-Entimau Wildlife  
Sanctuary, Sarawak,  
Borneo.  
Photo: Doug Wechsler/  
VIREO]





their present distribution apparently represented a scattered remnant of specialized species descended from a formerly more widely distributed ancient passerine lineage, possibly representing the oldest remaining passerine group. He noted that the evidence of fossil eurylaimids of undetermined relationships from Lower Miocene deposits in Bavaria, Germany, suggested a re-treating family the ancestors of which probably arose in the Old World tropics during the Tertiary, but were largely replaced by advanced oscines which emerged later, also from the Old World tropics. The massive radiation of suboscines in the New World can be linked to the isolation of South America during the period from the Tertiary to the end of the Pliocene. Thus, Old World suboscines represent specialized remnants.

As one outcome of his study, Prum discussed a complex biogeographical history and evolutionary radiation which suggested that a geographical division of an undifferentiated eurylaimid ancestor led to the primitive genus *Smithornis* and to the common ancestor of all other genera in Asia. Diversification in Asia resulted in the evolution of *Calypptomena*, while a common ancestor spread to Africa, with isolation leading to the relict *Pseudocalypptomena*, but with the Asian lineage evolving into a variety of species. Prum later questioned the fossil record of the broadbills, alleging that the few Bavarian specimens were probably barely identifiable as passerines, and that they had been regarded as broadbills only on the basis of size. Nevertheless, A. Feduccia, in his 1999 revised study of the origin and evolution of birds, continued to recognize the material as being eurylaimid; moreover, he pointed out that these meagre specimens are the only ones within the entire radiation of suboscine birds that are identifiable to the level of a family.

Recent analyses of DNA and other data presented in research results published in 2002 appear to support the southern origins of the passerines, with the Old World relict suboscines as survivors of ancestors that moved northwards from Gondwana over 60 million years ago, through what became Africa. The data sug-

gest that the broadbills are, indeed, closely related to the asities and the pittas, as discussed above. They do not, however, support a relationship of the New Zealand wrens to this group. The results of these latest studies indicate that, rather, the New Zealand wrens were isolated over 80 million years ago and apparently represent a sister-taxon to all other passerines.

Largely through the influence of the 1996 work by F. Lambert and M. Woodcock on the pittas, broadbills and asities, Prum's classification has gained a wider currency. For the time being, there seems little good reason for departing much from it, although it may be considered better to follow the traditional taxonomy for the asities by treating them as a separate family, rather than as a subfamily of the Eurylaimidae. Those authors also reviewed the classification of the species and subspecies, and made several changes from prevailing treatments, including the recognition, once more, of two species of broadbill in the Philippines. A preliminary review of the broadbills by R. W. R. J. Dekker and E. C. Dickinson, published in 2000, used the work of Lambert and Woodcock as a point of reference, but also examined earlier studies. In discussing various problems with subspecies, Dekker and Dickinson preferred to recognise the two Philippine populations of eurylaimid as constituting just one species. At the same time, however, they regarded this species as probably sufficiently distinct from the two other *Eurylaimus* species to merit generic separation, as *Sarcophanops*. Since the plumage and bare-part differences between the two groups are no less marked than are those between *Eurylaimus* and other genera, this proposal seems an acceptable one. The treatment adopted herein represents a reappraisal of all of the above, including some of the suggested changes.

Within the two widespread families of Old World suboscines, the recognition of nine genera for the Eurylaimidae contrasts with the treatment of the Pittidae. Indeed, all 30 species of pitta are conventionally placed in a single genus, although it is very likely that this will be demonstrated to be an oversimplification. Three of the four subfamilies of broadbills are well defined, as each contains just one genus. The fourth subfamily, the Eurylaiminae, encompasses the remaining six genera; as mentioned above, the relationships of these six genera to each other continue to be poorly understood, and further study may well result in the recognition of additional subfamilies. Such a possible outcome would, indeed, help to corroborate the ancient origins of this remarkable family.

The subfamily Smithornithinae, with the sole genus *Smithornis*, is represented by three species. All are stocky, rather short-tailed birds with a superficial resemblance to muscicapid flycatchers, clearly explaining their long association with those birds, although they also possess a distinctive broad, flat bill. Their sombre plumage, with variable amounts of brown, black



The different genera within the family exhibit striking differences in terms of morphology and plumage coloration.

The **Long-tailed Broadbill** with its yellow face, slender green body and long blue tail is unmistakable.

The relationships between genera within the family are unclear, though few, if any, appear to be closely related to one another. Broadbills come from an ancient lineage, being one of the very few families of suboscine passerine found in the Old World. Their present distribution probably represents a scattering of relict species descended from a more widespread older group.

[*Psarisomus dalhousiae* dalhousiae, Khao Yai National Park, Thailand. Photo: Suppalak Klabdee]

The **Rufous-sided Broadbill** is one of three members of the African genus *Smithornis*.

This distinctive genus is characterized by variable, often heavy, streaking of the underparts and upperparts. Their small size together with their rather drab coloration gives them a superficial resemblance to some flycatchers. Indeed, in historical times it took detailed study before they were correctly placed in the Eurylaimidae.

[*Smithornis rufolateralis* rufolateralis, Oban, Nyeri, Nigeria. Photo: A. P. Leventis]



The **Green Broadbill** is one of three members of the genus *Calyptomena*. All are found in the forests of the Greater Sunda subregion, and they may in fact constitute a separate family. They are all predominantly green, compact, short-billed and short-tailed birds. Males have more iridescent plumage with variable black markings. All three have characteristically stiffened loral plumes extending over most of the bill, although this feature is not so pronounced in females, as illustrated here.

[*Calyptomena viridis*  
*viridis*,  
Danum Valley,  
Sabah, Borneo.

Photo: Mark Bowler/NHPA]



and rufous, is highlighted by streaked white underparts, and particularly by the silky-white feather bases on the back, which are fluffed out and visible only when the birds display (see General Habits, Breeding). The widely distributed African Broadbill (*Smithornis capensis*) apparently occurs patchily through West to East Africa and south to north-eastern South Africa. It is currently split into nine subspecies to cover the complex geographical variation found throughout its wide range, but much more study is required in order to delineate these apparent differences. The fragmentary distribution of the African Broadbill in forested regions of West and Central Africa is contrasted with the records from eastern and southern Africa, where subspecific boundaries may be imprecise, but the situation is complicated by habitat loss causing the disappearance of this species from a number of regions (see also Status and Conservation).

The two other members of this Afrotropical subfamily are the Grey-headed Broadbill (*Smithornis sharpei*) and the Rufous-sided Broadbill (*Smithornis rufolateralis*), the former with three subspecies and the latter with two. Both have in common with the African Broadbill a fragmented distribution in the forests of West and Central Africa, and both also are probably more widely distributed, although neither occurs in southern Africa. Unlike their congener, however, they are more specialized as forest species. Recent evidence, such as that from vocalizations, has indicated that the Grey-headed Broadbill is more closely related to the African Broadbill. While some authors have considered the African and the Rufous-sided Broadbills to represent a superspecies, the evidence for this relationship has been refuted, again by such factors as vocalizations and the sounds produced by the primaries (see Voice).

Three congeneric species make up the subfamily Calyptomeninae. All are plump green birds with a short bill, a very short tail and a tuft of forward-projecting loral plumes, the latter more prominent on the males. The subfamily is confined to South-east Asia, where the smallest of the three species, the Green Broadbill, ranges from south Myanmar to Sumatra and Borneo and some offshore islands, and is divided into three subspecies. It is on several of these offshore islands, off western Sumatra, where the most distinctive form, *siberu*, is found. The notable difference in colour and size of this subspecies could even suggest that it is a different species. In Borneo, where the situation becomes more

complicated, the Green Broadbill is found mostly in the lowlands, whereas its two congeners live in the mountains, Hose's Broadbill (*Calyptomena hosii*) chiefly at mid-elevations, with Whitehead's Broadbill (*Calyptomena whiteheadi*) usually occurring at the higher elevations. There is some altitudinal overlap among the three, but the sequence is, in broad terms, from the smallest of the species at the lowest levels to the largest at the highest, representing a characteristic evolutionary development among birds living on islands which are big enough to cover a range of altitudes. This is a development more familiar on some other large islands, such as New Guinea. The situation on Borneo is not, however, a perfect one. While both Hose's and Whitehead's Broadbills are widely recorded from the higher elevations of Borneo, and do overlap in many places, there are some gaps in this distributional pattern. How much of this is the result of a lack of field observations, or of differences in habitat requirements, is yet to be resolved.

With eight species in six genera, the subfamily Eurylaiminae is the largest of the family. As already mentioned, the interrelationships of these genera are not clear, so that their placement together is still tentative; similarly, the sequence in which they are placed is necessarily somewhat arbitrary, but there seems no reason to dispute that followed by Lambert and Woodcock. The genus *Cymbirhynchus*, containing the Black-and-red Broadbill (*Cymbirhynchus macrorhynchos*), is generally characterized by its colour pattern of largely black upperparts and maroon underparts, and a bright blue-and-yellow bill. Confined to South-east Asia, where it ranges from south Myanmar and south Vietnam south to Sumatra and Borneo, it has been found only in lowland rainforest, with an apparent specialization towards forested areas close to rivers and streams. There is some variation in this species' plumage characters, normally summarized as the recognition of four subspecies; nevertheless, although geographical trends are apparent, the extent of individual variation remains to be clarified.

A very distinct member of the family, appearing as a slim and long-tailed bird in green, yellow and blue, the Long-tailed Broadbill (*Psarisomus dalhousiae*) has a wider range than the previous species, extending from the foothills of northern India across to south-east China and Indochina and south to Sumatra and Borneo. An understanding of the geographical variation of





The members of *Eurylaimus* are usually encountered in pairs, like this male and female **Black-and-yellow Broadbill**, or in small family groups. Nevertheless, parties of up to 15 birds have been recorded, and the density of individuals in a forest can be surprisingly high. Inside the forest, calling individuals often trigger a loud chorus of responses from nearby birds. Black-and-yellow Broadbills occasionally join up with mixed-species feeding flocks that pass through their territory.

[*Eurylaimus ochromalus*,  
Panti Forest Reserve,  
Malaysia.  
Photo: Morten Strange]

this broadbill is incomplete. At present, five subspecies are generally accepted, but the evidence suggests that at least two more are required in order to express the nature of the variation involved.

*Serilophus*, the third genus of the subfamily Eurylaiminae, is, like the previous two, monotypic. Its sole representative, the Silver-breasted Broadbill (*Serilophus lunatus*), is a small species of more subdued plumage but with some contrasting features, such as the blue, black and rufous markings on the wings. It has a range similar to that of the Long-tailed Broadbill, but it is absent from Borneo. The geographical variation of the Silver-breasted Broadbill is complex, resulting in more subspecies having been described for this species than for any other member of the family. Of the ten subspecies normally considered to be valid, four occur in Myanmar, and it is there that the defining of the boundaries between the subspecies has been particularly difficult. The distinctive western race *rubropygius*, extending from India to north Myanmar, was long considered to represent a separate species, chiefly because of a presumed range overlap with the nominate race in north Myanmar. A recent careful examination of the relevant details enabled it to be demonstrated that these different forms do in fact occur close to each other, but without overlapping in distribution. As a consequence, it is now generally agreed that all the forms should be treated as subspecies of the Silver-breasted Broadbill. Furthermore, apart from complexities concerning geographical variation in Myanmar, the status of Indochinese populations, notably those in Laos, remains to be resolved.

The two species in the genus *Eurylaimus*, again confined to South-east Asia, are the Banded Broadbill (*Eurylaimus javanicus*) and the Black-and-yellow Broadbill (*Eurylaimus ochromalus*). The former occurs from south Myanmar and Indochina south to Java and Borneo. It is a large species with a purplish head and underparts and yellow streaking above, but with some geographical variation represented by the recognition of five subspecies. The feature of a black chestband on the male is absent in Javanese birds. This lack of a black band, along with a number of other features, suggests that the population in Java, where the avifauna characteristically exhibits a higher degree of endemism than is found in Sumatra or Borneo, may represent a separate species. From an evolutionary viewpoint, the Javanese Banded Broadbills are notable because the male clearly has a "female-

like" plumage, a phenomenon demonstrated by various island populations of several polytypic species.

Smaller than the previous species, and with a similar but less extensive range, the Black-and-yellow Broadbill, as its name suggests, has contrasting black and yellow plumage markings. Perceived geographical variation in this species has resulted in two isolated populations, one on the islands off north-western Sumatra and the other in a small region of Sarawak, in Borneo, being treated as subspecies in some recent works. This, however, would seem to be incompatible with a general picture of the variation of this broadbill, which appears to be more individual than geographical in nature, and there seems to be no valid reason to recognize any subspecies.

The genus *Sarcophanops* contains two closely related species, both confined to the Philippines. Until recently, these two forms were usually regarded as conspecific, but it is considered better to treat them as two separate species forming a superspecies. Moreover, many authors have preferred to merge the genus with *Eurylaimus*, although not always with any real conviction. On the basis of a number of morphological characters, in particular the prominent blue wattle around the eye, found on no other eurylaimid species, the generic separation of the Philippine broadbills is considered probably a better taxonomic treatment. This also reflects the isolation of the main archipelago, where a significant percentage of endemic taxa, including genera, occurs; *Sarcophanops* provides a further striking example of a genus restricted to the Philippines. The Mindanao Wattled Broadbill (*Sarcophanops steerii*) is found on Mindanao and the nearby islands of Basilan, Malamaui, Siargao, Poneas and Dinagat; while two subspecies are normally recognized, the differences between them may be slight. The Visayan Wattled Broadbill (*Sarcophanops samarensis*) is confined to Leyte, Samar and Bohol, north of Mindanao.

The monotypic genus *Corydon*, the sixth and last of the subfamily Eurylaiminae, is represented by a remarkable member of the family, the Dusky Broadbill (*Corydon sumatranus*). It is the largest of the broadbills, a blackish, thickset bird with a massive bill; in fact, it has proportionately the broadest bill of all the passerines. As most eurylaimids, the Dusky Broadbill is confined to South-east Asia, occurring from south Myanmar and Indochina south to Sumatra and Borneo. It exhibits considerable variation throughout this range, and eight subspecies have been described.



Much of this variation, however, appears to be individual, and, while the extent to which it can be interpreted as being geographically based is rather difficult to determine, it seems likely that no more than three or four subspecies are involved. The characters include a dorsal spot which varies in colour from scarlet to orange, but the significance of this normally concealed colour character is yet to be determined.

Finally, the fourth of the subfamilies, Pseudocalyptomeninae, contains a single species, Grauer's Broadbill. This is an isolated, relict species living in the mountains of the eastern region of Central Africa, an area notable for a number of rare and unique bird genera and species. When it was first reported, this extraordinary bird, discovered in 1908, was thought by its describer to be a highly aberrant flycatcher, partly because it had ten primaries, and broadbills were as yet unknown in Africa. The generic name given to it, *Pseudo-calyptomena*, was in allusion to what was thought to be a superficial similarity in colour and shape to the green broadbills of the Asian genus *Calyptomena*; that it was later shown to be related to them after all is something of an irony. The two discrete populations of Grauer's Broadbill, one in eastern Zaire and the other in west Uganda, appear to differ to some extent in their habitat preferences (see Habitat) and in certain aspects of their behaviour (see General Habits). Although currently not even separated as different races, further research may show that they are close to becoming two separate species.

### Morphological Aspects

Broadbills are thickset birds with a broad head, large eyes, a broad, flat, hooked bill and a wide gape. Most of the 15 species have strikingly patterned plumages featuring greens, blues, maroons and yellows, these colours usually being duller on the females, and in size and shape they range from being similar to flycatchers to having a resemblance to rollers.

The African *Smithornis* broadbills and the *Calyptomena* green broadbills are all sexually dichromatic, whereas the sexes of Grauer's Broadbill are similar. Of the remaining eurylaimids, sexual dichromatism is most pronounced in *Eurylaimus* and *Sarcophanops* and is slight or absent in the other genera. The significance of these differences between genera is unclear, but it seems likely to be connected with differences in breeding behaviour (see Breeding).

The wide bill and gape are well suited for the insectivorous and carnivorous diet of most eurylaimids. The three green broadbills of the genus *Calyptomena*, however, have become frugivores (see Food and Feeding), having lost the wide bill while retaining the wide gape, but this specialization has meant that, as they are unable to manipulate large fruits with the bill, they must swallow these whole.

Recognition of the Eurylaimidae as passerines began with studies of their pterylosis and palate structure. They were subsequently set apart from all other passerines because, in the structure of the foot, the deep plantar tendons were joined by a vinculum, and also because the manubrium (spina externa) of the sternum was a simple rod and was not forked. It was thus the determination of the presence of a plantar vinculum that led scientists to the realization that the African species were, in fact, members of this family. The three other characters long thought to be unique to broadbills are the possession of 15, rather than 14, cervical vertebrae, a weak hallux, and the absence of a cup-and-ball joint in the quadrato-jugal articulation. The review of these characters, and the additional evidence provided by subsequent anatomical and molecular studies, as noted above (see Systematics), have restored the broadbills to their original placement close to the other Old World suboscines.

The three African species in the genus *Smithornis* are characterized by variable amounts of streaking in their plumage, both on the darker upperparts and on the lighter underparts. The overall effect is to produce a superficial resemblance to some flycatcher species, making their earlier classification with that group understandable, even though the broad, flat bill is distinctive. Further, the hidden white feathers on the back, which can be fluffed out, is a feature shared with some wattle-eyes

(Platysteiridae), a group previously placed in an expanded Muscicapidae family. All three *Smithornis* species have stiff, twisted outer primaries, those of the Rufous-sided Broadbill being particularly narrow at the base. These outer primaries vibrate during display-flights (see Voice, General Habits), producing a mechanical, buzzing trill that sounds more musical from a distance and was long thought to be a vocalization.

In contrast to those three species, the *Calyptomena* green broadbills are compact, short-billed, short-tailed birds having a predominantly green plumage, iridescent in the males, and with variable areas of black, or black markings. Hose's Broadbill is extensively blue on the underparts, while the island form *siberu* of the Green Broadbill has a bright blue wash, particularly on the underparts. The black markings are more pronounced and better developed on the males, and are most extensive on the male Whitehead's Broadbill. All three species have the characteristic stiffened loreal plumes extending over most of the bill, although this feature is less developed on females. In Borneo, where all three occur, with some altitudinal overlap, they exhibit a distinct gradation in size: the Green Broadbill is 14-17 cm long and weighs 43-72.8 g, Hose's Broadbill is slightly bigger at 19-21 cm and 92-115 g, while the largest, Whitehead's Broadbill, measures 24-27 cm and weighs as much as 142-171 g.

Bearing a superficial resemblance to the Asian green broadbills, Grauer's Broadbill shares with those the compact shape and the predominantly green plumage, with some blue on the underparts. Its tail, although relatively short, is longer than that of *Calyptomena*. Unlike the latter, however, the African species has no development of loreal plumes over the bill, which is less specialized, reflecting its mixed insectivorous and frugivorous diet (see Food and Feeding). The pectoralis major, the muscle required for executing downstrokes, is well developed in this species, suggesting an ability to perform aerial displays analogous with those of the Asian green broadbills or, perhaps more likely, the other African eurylaimids (see General Habits), although no such displays have been documented for Grauer's Broadbill.

All other broadbills, thrown together in the subfamily Eurylaiminae (see Systematics), and with mostly overlapping distributions in South-east Asia, exhibit a range of sizes and

**The Silver-breasted Broadbill** exhibits slight sexual dichromatism. The female bird, pictured here on the right, shows a thin, often broken, silver breast band. The extent of sexual dichromatism in the broadbills varies, being most pronounced in the genera *Calyptomena* and *Smithornis*. Of the remaining broadbills it is also exhibited by *Eurylaimus* and *Sarcophanops* but is slight or absent in the other four genera.

[*Serilophus lunatus stolidus*,  
Kang Krajam National Park,  
Thailand.  
Photo: Suppalak Klabdee]





weights matching that of the green broadbills in Borneo. It is uncertain if there is any significance in this pattern, although it may be linked with ecological separation (see Habitat). The Black-and-red Broadbill, with its contrasting black upperparts and maroon underparts, also has white wing patches which are conspicuous when flashed in flight. It is normally found in forested areas near rivers and streams, and it is interesting that many avian species specializing in riverine habitats feature flashes of white in their plumage, believed to be an adaptation enabling contact between individuals in areas where sound may be muted by the noise of flowing water. Unlike many such species, however, this broadbill does not have high-pitched calls, and it is probably only secondarily adapted to these habitats, perhaps through competition with other broadbills.

Superficially somewhat similar to the Black-and-red Broadbill, the Banded Broadbill lacks that species' white wing patches, instead having conspicuous yellow markings on its back and wings. In Java, where no other broadbill occurs, the male has lost the black chestband and is similar to the females of the other four subspecies of the Banded Broadbill. Thus, the Javan male is "hen-feathered", an indication that, with a lack of competition, distinctive sexual dichromatism became of lesser importance. The phenomenon of otherwise sexually dichromatic birds developing "hen-feathered" males in parts of their ranges is known also from islands farther east, as demonstrated by, for example, some races of the Golden Whistler (*Pachycephala pectoralis*). Such a conspicuous morphological development is also sometimes considered as evidence that a population may have evolved into a separate species, and this may be the case with the Banded Broadbill.

The congeneric Black-and-yellow Broadbill, at 13.5-15 cm and 31-39 g, is only half the size of the Banded Broadbill, which is about 22 cm in length and weighs up to 87 g. While sharing with the latter the conspicuous yellow markings on the upperparts, it is otherwise a darker bird.

An early derivative of these eurylaimids has been long isolated in the central and southern Philippines, where it is now represented by two species (see Systematics). The most remarkable feature of the wattled broadbills, and one found in no other eurylaimids, is the development of a ring of large blue wattles around the eye. Such integumentary structures as wattles have evolved independently in a number of bird families, including several, such as the asities in Madagascar, which have been isolated for a lengthy period of time on islands. The wattles may have a display function, but this has not as yet been shown to be the case. Both of the Philippine species have generally dark upperparts, and, whereas the males have pinkish underparts, the females are white below.

The largest member of the family, the Dusky Broadbill, is dark blackish in colour but with a contrastingly lighter throat patch and a fairly prominent white wing patch. The big, hooked bill is conspicuously pinkish, as also is an area of bare circumorbital skin. This species has a variably red or orange dorsal spot, which is generally invisible in the field. The function of this is unknown, but it may, again, be linked with display.

At the opposite extreme in terms of morphology and plumage coloration, the slender, green-bodied, blue-tailed Long-tailed Broadbill, with its striking head colour of yellow and black, is unmistakable. This aptly named eurylaimid has a tail that is up to 15 cm in length, the longest of any member of the family. Perhaps equally attractive in its own way, the Silver-breasted Broadbill is mostly silvery grey in colour, with darker upperparts and blue, black and rufous markings, and a conspicuous black eyebrow. The combination of these colour characters exhibits much variation over its large range. Apart from its absence from Borneo, this species has a very similar distribution to that of the larger Long-tailed Broadbill, with which it co-exists in many places (see Habitat).

Juvenile plumages of all eurylaimids are similar to those of the adults, differing only in being duller and, in some cases, shorter-winged and shorter-tailed. Unfortunately, but by no means surprisingly, there appears to be a dearth of information on the moult strategies of the Eurylaimidae. Adults moult the flight-feathers and the tail feathers after breeding, but little else has been documented.

## Habitat

The Eurylaimidae are widespread in the Palearctic, where they are all specialized forest birds. A few species extend marginally into other habitats, and the Long-tailed and Silver-breasted Broadbills inhabit subtropical forest in the northern parts of their ranges. Only the African Broadbill occurs extensively outside forest, and in a small area where it ranges outside the tropics, in southern Africa, it can be found in woodland and scrub.

Several species have been recorded from plantations and cultivation, and even around villages, but such occurrences are normally confined to foraging activities. Nevertheless, there are instances of eurylaimids breeding in more open areas, such as Black-and-yellow Broadbills nesting in tree plantations, but events of this kind are very unusual. The only species showing any tolerance of relatively open habitats on a more regular basis is the Black-and-red Broadbill, but this appears to be a consequence of its preference for localities near water, with some cover, and even then never too far from forest.

The broader range of habitats occupied by the African Broadbill covers evergreen forest, riparian forest, dense savanna woodland, bamboo stands, deciduous thickets, coastal bush, disturbed forest and scrub mosaics, and patches of montane forest, including areas dominated by tree-ferns. Locally, it extends into cultivation and tree plantations, and into vegetation around villages. It will also enter logged forest, and has even been recorded in pine (*Pinus*) plantations, as, for example, in Zambia. Although this species occasionally occurs in primary forest in East Africa, this is in contrast to the situation farther west, where the presence of its congeners restricts it to drier areas outside the main evergreen forest. The altitudinal range within which the African Broadbill is found is wide, ranging from sea-level, as in the coastal woodland of south-eastern Africa, up to 2550 m, as in parts of the interior. It seems generally, however, to prefer much lower elevations, and particularly those below about 700 m, although the E African subspecies *medianus* is strictly a montane bird.

Primary forest and relatively undisturbed secondary forest are the main habitats of the two other *Smithornis* broadbills, both of which are distributed over a smaller range than the African Broadbill. Both will also enter old logged forest. The Grey-headed Broadbill, while recorded at up to 1950 m, prefers mid-montane levels, although much variation has been noted in this respect, particularly from surveys conducted in Cameroon. Its relative, the Rufous-sided Broadbill, exhibits a preference for dense undergrowth near water, and has also been found in old plantations. It inhabits mainly lowlands, only locally ascending as high as 1500 m.

The last of the four Afrotropical eurylaimids, Grauer's Broadbill, occurs in two isolated populations which display some difference in habitat preferences. In east Zaire, this Vulnerable species is found in montane forest, including areas of bamboo, and also in trees in clearings and cultivation, at elevations of 1760-2480 m; it is, however, usually observed below the bamboo zone, and especially at forest edges. Several observers have commented that, in Zaire, this species shows an apparent tendency to prefer dense foliage and the upper branches of tall trees, at levels of 7.5-23 m above the ground. In neighbouring Uganda, on the other hand, Grauer's Broadbills mostly live at higher altitudes, at 2060-2285 m, where they seem to exhibit a distinct preference for areas of primary forest that are dominated by *Chrysophyllum gorungosanum* trees growing on steep slopes. Moreover, the Ugandan birds appear to be associated more with the lower strata of the forest, usually occupying the upper level of the understorey at about 2.5 m.

In Asia, primary and secondary forest harbours all three of the *Calptomena* green broadbills, which are true forest specialists. The Green Broadbill is sometimes seen in other types of forested habitat, or in plantations and logged forest, but perhaps only when making foraging excursions. It is a lowland species, usually found below 700 m, but ranging locally up to 1700 m. Its two congeners are both confined to Borneo, where the slightly larger Hose's Broadbill ascends to about 1680 m, but usually occurs at about 600-1220 m, whereas Whitehead's Broadbill, the biggest of the three, ranges from 600 m to 1980 m, but is found





**Green Broadbills** are predominantly tropical-forest specialists like most other members of their family. Broadbills inhabit a wide range of undisturbed forested habitats at altitudes up to 2500 m.

Some exhibit strong habitat preferences, such as the Black-and-red Broadbill (*Cymbirhynchus macrorhynchos*), which favours riparian forest. Only a few species extend into marginal habitats.

Where a number of broadbill species exist together competition is reduced by differences in size, weight and bill morphology. In Borneo, where all three species of *Calyptomena* occur together, they differ in size and weight and show altitudinal preferences that effectively separate them.

[*Calyptomena viridis*.  
Photo: Roland Seitre/Bios]





Broadbills are not spectacular songsters but instead possess a functional range of vocalizations. The **Dusky Broadbill** occurs in small close-knit groups that are highly vocal, and this habit often leads to their detection high in the canopy. Dusky Broadbill vocalizations include a distinctive series of six to eight screaming notes on an ascending scale and a variety of whistles. The African genus *Smithornis* supplements its vocalizations with an array of mechanical noises produced with an emarginated primary whilst displaying. Interestingly, such mechanical sounds are also made by the closely related asities (*Philepittidae*) of Madagascar.

[*Corydon sumatranus sumatranus*, Panti Forest Reserve, Malaysia.  
Photos: Morten Strange]

chiefly at 900–1700 m. The latter prefers tall growth in montane forest, and avoids stunted forest.

Several of the Asiatic eurylaimids are less restricted in their choice of habitat. The Black-and-red Broadbill, for example, is found in a diversity of lowland forests, including mangroves, as well as in plantations, and it also occurs locally in and around villages and gardens. In all cases, however, it is usually found only near rivers, streams and flooded areas. These habitats are utilized even if they have suffered disturbance, so long as there is an element of forest habitat, particularly some tall trees, remaining. This species ranges locally to 900 m in Borneo and Sumatra, but is otherwise a denizen of the lowlands up to 300 m.

The Long-tailed, Silver-breasted, Banded and Black-and-yellow Broadbills occupy a wide range of evergreen and deciduous forests. The first of those species can also be seen at the edges of pine forest and in areas dominated by bamboo, with altitudinal migrants (see Movements) wandering into more open areas and gardens, while the second has been recorded in pines, oak (*Quercus*) and bamboo and also enters logged forest, cultivations and gardens. In the Indian Subcontinent, Long-tailed Broadbills have been thought to show a preference for areas near water but lacking extensive undergrowth, although this seems not to have been noted elsewhere in the species' large range. Both the Long-tailed and the Silver-breasted Broadbills extend over a wide altitudinal band. The former reaches about 2000 m in much of its range, being mainly a montane bird in southern Peninsular Malaysia, Sumatra and Borneo, but its mainland populations are generally found at mid-montane levels. Similarly, the Silver-breasted Broadbill occurs from the lowlands to 2230 m, and is largely a montane species in the southern parts of its range.

A more definite liking for the proximity of rivers and streams is shown by the Banded Broadbill, which is not infrequently seen in plantations, gardens and villages, as well as in evergreen and mixed deciduous forests. Its single congener, the Black-and-yellow Broadbill, also extends into secondary forest, plantations and logged forest, particularly if some large trees survive. Both of these species are lowland birds, the Banded Broadbill occasionally reaching to 1500 m, while the Black-and-yellow Broadbill ascends to no more than 900 m in Sumatra and about 1220 m in Borneo.

Like the previous four species, the Dusky Broadbill inhabits a variety of evergreen and deciduous forests, reaching the edges of plantations and mossy forest at higher altitudes. There is evi-

dence to suggest that it prefers areas near rivers and streams. Throughout its range, this large eurylaimid has been recorded at higher elevations of up to 2000 m, notwithstanding which it is normally a lowland bird.

In the Philippines, the two wattled broadbills are chiefly forest inhabitants. Indeed, the Visayan Wattled Broadbill is apparently restricted to primary forest, including forested limestone outcrops, in the lowlands, with local records at up to 750 m. The Mindanao Wattled Broadbill is found in evergreen forest, including remnant patches, and in secondary forest, particularly near rivers, but it occurs also in mangroves. Although normally found well below 1000 m, it has been recorded at up to about 1220 m.

It is fairly clear from the details outlined above that broadbills have a limited tolerance of disturbed areas. Within forested environments they inhabit a wide range of types, but lowland evergreen forests include the most favoured types. Apart from the Black-and-red Broadbill, several other members of the family show a particular liking for forested areas near water, but none is so clearly specialized in this habitat preference as is that species. While most eurylaimids range into higher elevations, the bulk of their populations is found in lowland areas. All the same, several species which demonstrate a preference for lowlands in many areas have discrete populations which are restricted to montane regions. The extent of altitudinal variation in habitat selection, even within individual species, may be the result of competition, but this is unclear and further study is required.

The broadbills in the subfamily Eurylaiminae (see Systematics) overlap widely in distribution in South-east Asia, and several species often occur together in the same habitats. All eight are adapted to similar feeding strategies, combining sit-and-wait aerial sallying and active gleaning of branches and leaves (see Food and Feeding), but they differ in size and weight in much the same way as do the green broadbills in Borneo (see Morphological Aspects). There is some evidence of a correlation between increasing size and higher foraging levels, but this pattern is not exclusive and is dependent on which other species are present and on the type of forest habitat occupied.

The Banded and the Black-and-yellow Broadbills overlap throughout much of their ranges, but the former is twice the size of its congener. The two co-exist by feeding on the same prey, but of different sizes, as demonstrated by a study in Borneo. Where the Long-tailed Broadbill overlaps in distribution with other





**Green Broadbills**, along with the other two members of the genus *Calyptomena*, differ markedly from other broadbills in that they are obligate frugivores. This is reflected in the structure of their bills. In this genus the bill is much smaller than in other genera, but the birds still have a characteristically wide gape which allows fruit to be swallowed whole.

Green Broadbills have a marked preference for figs (*Ficus*) but they will take other kinds of fruit.

Studies of this species in Peninsular Malaysia demonstrated that the species fed on the fruit of 21 species of fig, ranging in size from 5.4 x 5.9 mm to 32.4 x 27.4 mm. Seeds are regularly regurgitated.

Radio-tracking showed that the birds spent the majority of their time in the vicinity of suitable fruiting fig trees. Green Broadbills forage in pairs or small groups usually in the lower and middle storey but they also enter the canopy of trees that are in fruit. They usually pluck fruit in short flights but exceptionally take fallen fruit from the ground.

All three *Calyptomena* broadbills will also feed opportunistically on invertebrates, for instance at termite swarms, and invertebrates are an important part of the diet of nestling birds.

[Above: *Calyptomena viridis viridis*,  
Danum Valley,  
Sabah, Borneo.  
Photo: Francis Lanting/  
ASA.

Below: *Calyptomena viridis caudacuta*,  
Krau Game Reserve,  
Kuala Lompat,  
Peninsular Malaysia.  
Photo: Frank Lambert]





Most broadbills are insectivorous. Prey items, such as the stick-insect held by this **Black-and-yellow Broadbill**, are typically captured in the air, or from foliage, during short flights from exposed perches. Although each species demonstrates a preference for certain prey items, they all appear to feed opportunistically. The larger species, in particular, are likely to take any small animal that presents itself. The bulk of the diet of most species is made up of insects, for instance orthopterans, beetles, bugs and hymenopterans, as well as their eggs and larvae. Other invertebrates such as millipedes, spiders, snails and small crabs are also taken. Some species also take small vertebrates like tree-frogs and lizards and even, in one case, small fish. Although the three *Calyptomena* species are the only obligate frugivores, the other broadbills probably all occasionally take a proportion of fruit. Indeed, fruit may be locally important for some of these other species, as for the Banded Broadbill (*Eurylaimus javanicus*) in Sumatra and Java.

[*Eurylaimus ochromalus*,  
Gunung Palung  
National Park,  
West Kalimantan, Borneo.  
Photo: Tim Laman]

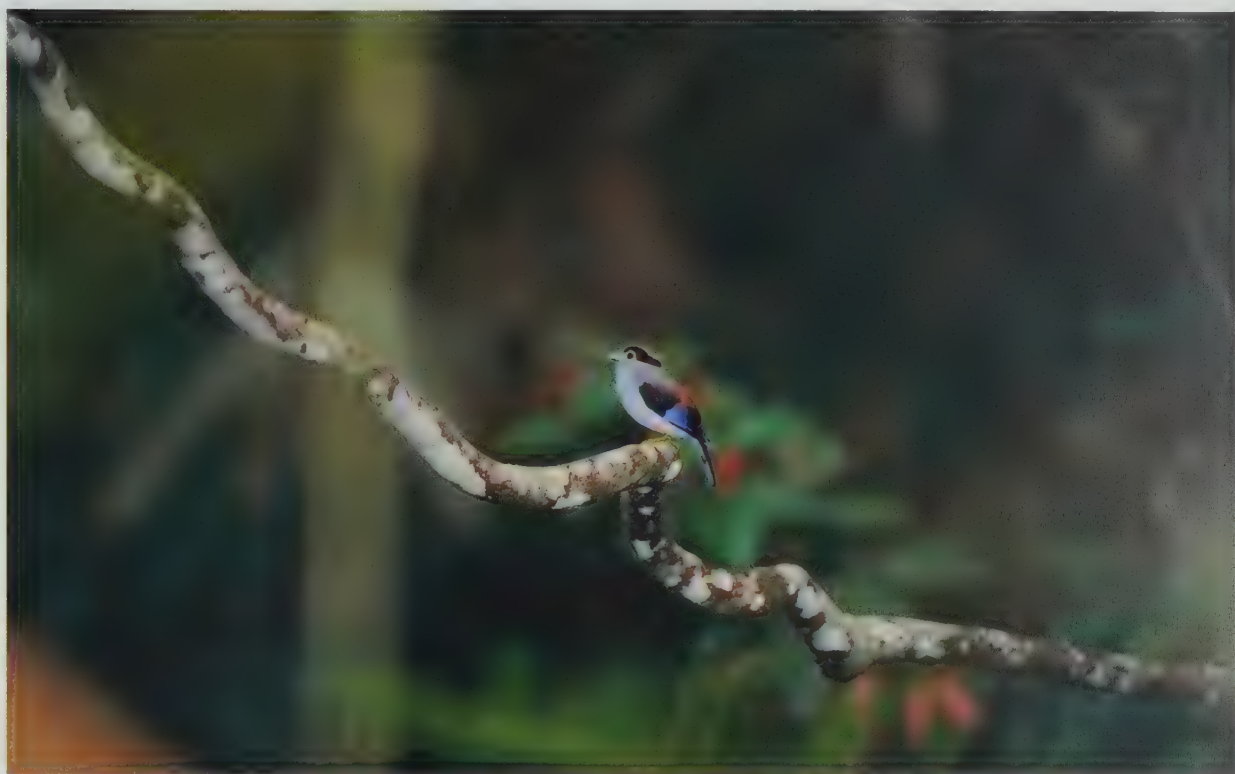


All broadbills have feeding strategies that combine aerial sallying from exposed perches, foliage-gleaning, and also quick flights to grab prey from branches or leaves. Most species feed in the middle storey but are occasionally found at all levels. Broadbills usually forage singly or in pairs, but they can be quite gregarious, sometimes associating with mixed-species feeding parties. Some species such as the **Silver-breasted Broadbill** form loose feeding flocks outside the breeding season.

[*Serilophus lunatus rothschildi*,

Fraser's Hill (1100 m),  
Malaysia.

Photo: Morten Strange]



broadbills, it is normally found at higher elevations, but the situation is less clear in Indochina. The same applies to the Silver-breasted Broadbill. Although very different in appearance, those two species have very similar distributions and habitat requirements. Their ability to co-exist is evident from their sizes: the Long-tailed Broadbill is 23-26 cm long and weighs up to 67 g, the corresponding figures for the Silver-breasted Broadbill being 16-17 cm and about 25-35 g.

### General Habits

What is known of the general habits of broadbills is largely a collection of anecdotal observations centred on feeding and breeding activities, a fact which applies equally to many other birds of tropical forest. While more extensive observations have been made on the Green Broadbill, these are based largely on a study of captive individuals. Some details of displays have been recorded for broadbills in Africa, but little relevant information is available for the Asian species. The picture emerging from the scattered data suggests that there are more similarities among the members of the family than may be indicated by other evidence. Moreover, a paucity of data on the lives of many tropical birds is all too familiar when compiling information for a large number of bird families. Unfortunately, the opportunities for further study of these birds are decreasing, but, if they are to survive and prosper in the remaining tropical forests of which they are a very integral part, such information is vital for the management of these habitats.

Broadbills characteristically perch quietly in concealed locations, usually in the foliage of trees. They may be first detected by their calls, commonly given in the early mornings and late afternoons but, in some cases, at various times throughout the day. The majority of members of this almost exclusively tropical family of birds are most active during the earlier and later parts of the day. Several appear, in fact, to be almost semi-crepuscular in their activity. The Dusky Broadbill, for example, is generally far more likely to be seen and heard in the early part of the morning and late in the evening, while the Silver-breasted Broadbill, at least in the northern parts of its range, also tends to be rather crepuscular.

Similarly, since these birds tend to be rather shy, little has been published on any aspects of their comfort behaviour. The

Green Broadbill has been observed to bathe in puddles and forest streams with a relatively high degree of frequency, but few other details are available.

Many eurylaimids are gregarious and are often found in small flocks, this being particularly true of the Dusky Broadbill, which seems invariably to live in groups of up to ten individuals, while flocks of 20 have been recorded. Long-tailed Broadbills normally occur in flocks of up to 15 or so individuals, but as many as 40 have been seen together in the Indian Subcontinent. Similarly, groups of up to 20 Silver-breasted Broadbills and of up to 15 Black-and-yellow Broadbills have been reported. Even the poorly studied Grauer's Broadbill is known to occur at times in small flocks of up to ten individuals, although it is frequently encountered singly. In keeping with their generally sociable nature, the majority of broadbills will readily join mixed-species flocks when these bird waves pass through their foraging areas, and it is likely that all eurylaimids do this from time to time as part of their regular foraging activities. The habit is perhaps commoner among the insectivorous broadbills.

It is unclear whether or not breeding and foraging territories are maintained by all broadbills. The display-flights of the African broadbills of the genus *Smithornis*, for example, appear to have a territorial function. In Borneo, however, at least two species of green broadbill can be found in small numbers in the same fruiting trees.

When at rest, eurylaimids perch in a squat position with the head tucked in. The Dusky Broadbill will sit quietly for hours in this posture, with the neck drawn in and the bill pointing upwards. Recently, one observer, in noting similar behaviour by the Silver-breasted Broadbill, remarked that this apparent lack of fear can offer good viewing opportunities for birdwatchers. In contrast, this type of behaviour elicited a rather different response from the ornithologist and collector W. Davison, who commented, in 1878, that the broadbills "might well be designated a stupid set of birds". In this context, Davison thought that Silver-breasted Broadbills were the most stupid of the lot: "They usually move about in small parties, and when one meets with a party, every bird of which it consists can, without difficulty, be secured, as the birds take no notice of their companions being shot, and do not appear to be at all alarmed at the report of the gun, seldom moving further than the next branch, sometimes not moving at all, when the gun is fired." This "stupid" behaviour, so called because it makes it easy to shoot the birds, was noted by Davison





#### Green Broadbills

regularly come to the ground to bathe or drink at small puddles, pools and streams in the forest. They have also been observed taking fallen fruit from the forest floor but such behaviour appears to be rather rare. The bright green plumage of this genus, which looks so striking in illustrations, is in fact extremely cryptic amongst the plentiful foliage of the middle and upper storeys, whereas on the ground it can make for rather poorer camouflage.

[*Calyptomena viridis viridis*, West Kalimantan, Borneo. Photo: Martjan Lammertink]

also for the Dusky Broadbill, flock-members of which would, like those of the Silver-breasted Broadbill, "allow themselves to be shot one after the other without any attempt to escape".

A century later, the Philippine ornithologist D. S. Rabor discussed a similar kind of behaviour by the Mindanao Wattled Broadbill. He commented that, once the observer or collector had discovered a group of these birds, it would be easy to collect them in a particular spot in the forest. This was because, in spite of the noise produced by the first shot, the remaining birds would continue to perch in exactly the same places as they had been before being discovered. The other flock-members would remain nearby and act "stupidly", and it would be some time before the group finally left the site.

Davison was kinder to the Green Broadbill and pointed out that, while not shy, it was not stupid like the other broadbills. Interestingly, it is for Green Broadbills that the most remarkable behaviour has been observed (see also Breeding), much of the information having been derived from observations made on captive individuals. An extraordinary spinning display performed by the male, usually after repeatedly "ricocheting" around its aviary, is apparently seasonal in occurrence, having been documented only for the period from December to July. From a perch about 50 cm above the ground, the male locates the female on her usual perch a metre or so higher and to one side, briefly flashes his wings, and then rapidly ascends vertically to a large branch on the ceiling of the aviary; here, with his bill open wide, he spins around, occasionally touching the branch with his bill. After several such "beak pirouettes" over a period of five to ten seconds, the male moves to another display perch. Although the female may watch this display, she appears not to respond to it.

Far less is known about the behaviour of the two other *Calyptomena* species. In one observation of Whitehead's Broadbills, at least three males sat on small horizontal branches just below the canopy and were calling almost continuously. Two of the males were perched closely together and apparently competing as they called, while the other male which was visible was calling from a different branch nearby. Although Hose's Broadbill is known to bob the head and neck when calling, virtually nothing else is recorded of its behaviour. It does, however, seem quite possible that all three species of green broadbill share similar ritual displays and breeding behaviour.

In the Afrotropics, the three *Smithornis* species have an interesting display-flight. That of the African Broadbill, apparently performed by both sexes, takes the form of a short flight on an elliptical horizontal path, with a diameter of about 60-80 cm, and is repeated with a frequency of about one flight every 45 seconds. During this aerial display, the feathers of the lower back are puffed out, making the white feather bases very conspicuous, while at the same time the stiff, twisted outer primaries vibrate, producing a mechanical-sounding whistle loud enough to be audible up to 60 m away (see Voice). The flight is sometimes immediately preceded by an upward leap, in which the bird jumps vertically up to 25 cm above the perch. Although usually associated with breeding, these aerial displays have been recorded throughout the year in some regions. The display-flight of the Grey-headed Broadbill is similar, but on a circular, rather than elliptical, flightpath (see also Breeding).

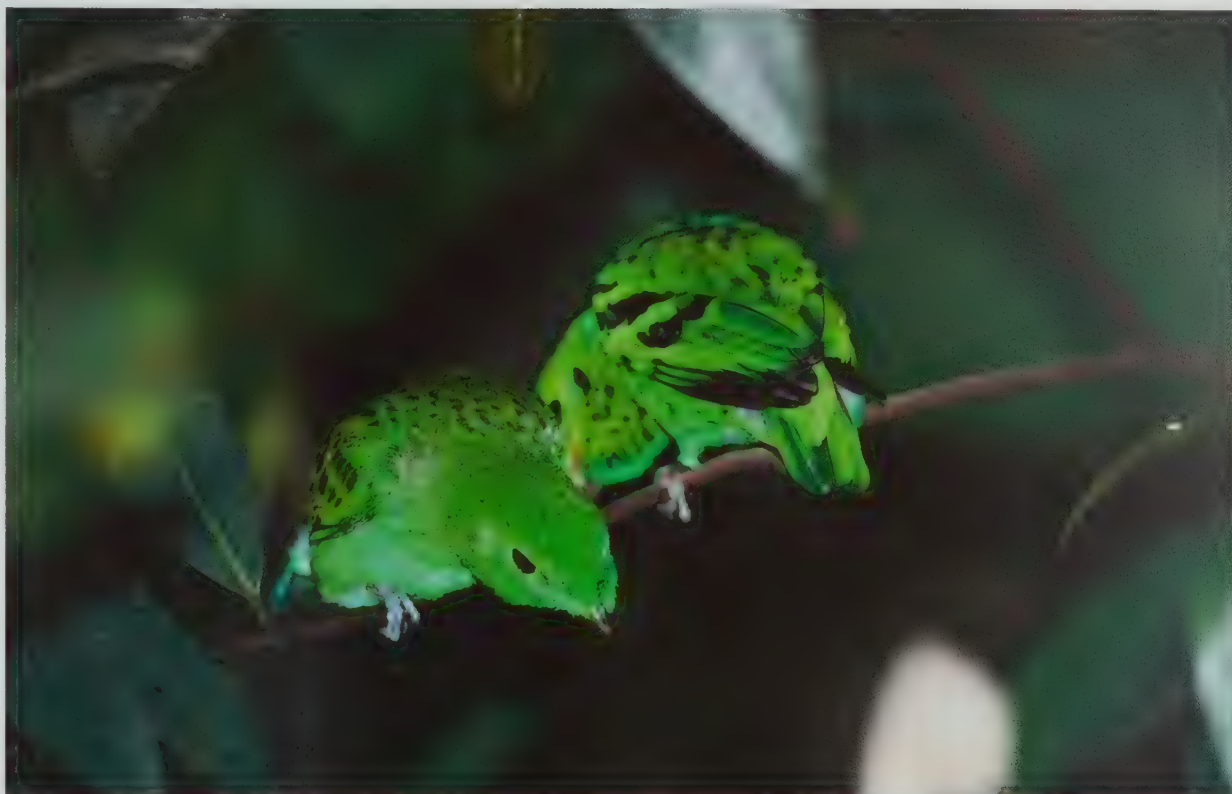
Although the courtship display of the Rufous-sided Broadbill is different from that of the African Broadbill (see Breeding), its aerial display is very like the latter's. The display-flight is performed in all months of the year, and by both sexes, although more frequently by the male, and is seen most often at dawn and dusk. In West Africa, it was found that display periods normally started before dawn and continued until about 09:00 hours, before resuming in the late afternoon and continuing until dusk; at other times of the day, displaying was recorded only sporadically. The flight is started from a horizontal perch 5-15 m above the ground. The bird first makes one or two abrupt jumps into the air, sometimes turning in mid-jump, before flying on an elliptical path, measuring about 1 m across, which takes it back to the same perch. Again, the white of the back feathers is exposed, and the stiff, twisted, narrow-based outer primaries produce a mechanical trill audible to a distance of 150 m. The tone of this sound changes according to the angle of the flight ellipse, which varies from being level to inclining upwards at an angle of 45 degrees.

Observations have shown that the aerial display of one Rufous-sided Broadbill provokes the same display by another, thus demonstrating that these display-flights have a territorial function. Although the male may continue to make display-flights from the same perch, it is more likely that he will use a succession of perches, when he can then cover a distance of up to 1.5 km in approximately 15 minutes. Typically, flights are made at one-minute intervals for a period of about an hour, but the fre-



There is some evidence of polygyny in the *Calyptomena* broadbills of South-east Asia and the *Smithornis* broadbills of Africa. Males of both genera appear to have elaborate displays and may in fact compete against each other at individual or group lekking grounds. Tropical-forest birds that engage in lekking behaviour usually exhibit strong sexual dimorphism, and this is apparent in *Calyptomena*. The black wingbars of male **Green Broadbills** readily distinguish them from the generally paler females.

[*Calyptomena viridis*.  
Photo: Roland Seitre/Bios]



quency can be doubled if other individuals are displaying nearby. One Rufous-sided Broadbill averaged one flight every 30 seconds for a total of 14 minutes.

Although the poorly known Grauer's Broadbill is presumed, on the basis of the development of its pectoral muscles, to have distinctive displays, none has been reliably documented. Nevertheless, it has been suggested that the original 1930s observations of these birds flycatching from a high perch, and subsequently flying between perches about 30-90 m apart, may have been of a type of display perhaps similar to those of other African eurylaimids. The flight of these individuals, observed in Zaire, was reported as being straight and level, with rapid but silent wingbeats. In the Ugandan population of Grauer's Broadbills, on the other hand, the flight was reported as slow and of a gliding nature, and even on short flights the birds rarely flapped the wings after becoming airborne, evidently preferring to glide. Such behavioural differences between these isolated populations complement apparent ecological differences (see Habitat). It is possible that detailed studies of these two populations, including comparisons of their behaviour, may indicate that, although morphologically similar, they are two incipient species.

Among the typical broadbills combined in the subfamily Eurylaiminae, information on general habits is limited almost entirely to breeding and foraging activities. Details of displays and associated behaviour are known for only two species. The courtship behaviour of the Black-and-yellow Broadbill in Peninsular Malaysia is outlined below (see Breeding). Otherwise, two pairs of Black-and-red Broadbills in Borneo which were disturbed while feeding on the ground flew into nearby trees, where they greeted each other with loud churring calls and melodious whistles, while simultaneously bowing at each other and depressing the tail under the perch. It seems possible that this could be a type of territorial display.

A detailed study of the members of this family in the wild would undoubtedly yield remarkable new information. An understanding of the display repertoires of all broadbill species would be of great value, particularly in helping to reveal the true relationships of the genera currently placed together in the subfamily Eurylaiminae (see Systematics). Territorial behaviour may, indeed, be widespread in the family. The possibility of lekking behaviour among the African broadbills and the green broadbills

is notable (see Breeding). All six members of those two subfamilies are sexually dichromatic, and available information suggests that the females undertake all or most of the breeding duties (see Breeding). The sexes of Grauer's Broadbill, on the other hand, are similar, and this suggests that the displays of that species may not necessarily be comparable with those of either the Smithornithinae or the Calyptomeninae.

Of the remaining eurylaimids, sexual dichromatism is most pronounced in *Eurylaimus* and *Sarcophanops* and is slight or absent in the other genera. The significance of this is unclear, but available information suggests that, for the species with similar sexes, both participate in breeding activities and, in the case of three of them, additional birds help at least with the construction of the nest (see Breeding).

## Voice

Broadbills are certainly not renowned for their songs, but the evidence indicates that all 15 species possess a range of vocalizations representing a repertoire covering breeding, foraging contact, alarm and other functions. A complex of vocalizations has been noted from a study of captive Green Broadbills, and this is supplemented by observations of wild-living broadbills. Although not a vocalization in the strict sense, the mechanical trilling and buzzing produced by the emarginated outer primary is a characteristic of aerial displays and other behaviour of the African genus *Smithornis*. These distinctive and far-carrying notes, long believed to be vocal sounds, are not known to be made by any of the Asian broadbills, but the asities of Madagascar produce similar mechanical sounds.

The African Broadbill has a weak, plaintive whistle sounding like "huiiii" and a soft "twee-uu", as well as a quiet mewing call. These seem to serve various functions, such as contact, alarm and distress, and are also used in courtship. Similar notes are uttered by its two congeners. In addition, the Rufous-sided Broadbill has been reported as combining the "huiiii" call with other rhythmic notes during courtship to produce a simple, very basic song.

The voices of those three broadbills are generally weak when contrasted with the noise produced by the outer primary feathers during display-flights. The pitch of these mechanical sounds varies





Most broadbill species are monogamous. Both adults take equal shares in nest construction, a process which requires the collection and transport of a considerable amount of nesting material, often contributed in rather small portions, as demonstrated by these **Black-and-red Broadbills**. Incubation duties and care of the young are probably also shared between the two parents. Little is known about territoriality in broadbills, and most pairs seem to range widely, occasionally overlapping into the ranges of their neighbours.

[*Cymbirhynchus macrorhynchos macrorhynchos*, Sukau, Sabah, Borneo. Photo: Günter Ziesler]

according to species, being lowest in the African Broadbill and highest in the Rufous-sided Broadbill. Within the African Broadbill, in particular, there is some apparent geographical variation in these sounds, but further study is required to determine the significance, if any, of these differences.

Mechanical sounds made by displaying African Broadbills are loud, and have been likened to the fast rattle sound produced by pinging the free end of a wooden ruler which has been clamped across the edge of a wooden table. After beginning suddenly, the sound slows, before accelerating and then ceasing abruptly. It is a very fast, staccato, whistle-like trill about 0.7 seconds long, and has been shown to consist of four to six notes in 0.25 seconds followed immediately by 15 notes in 0.5 seconds. The transcription of this noise has been expressed variously as "tttt-rrrrrrrrrr", "kerrrrr", "purrup", "pr-r-r-r-rrrrrrup", "krrrrrrrooo", or "brrrrup". It is interesting to note that this mechanical noise, which has a distinct buzzing quality when heard at close quarters, appears to change with increasing distance, so that, when heard from about 60 m away, it seems to be less mechanical and more musical.

The mechanical sounds of the African and the Rufous-sided Broadbills have been compared to amplified frog croaks, suggesting the possibility of convergent acoustic design, perhaps providing some protection against predators. In areas where these two species co-exist with Grauer's Broadbills, this amplified communication is also considered to give the *Smithornis* broadbills a competitive advantage.

Experiments by R. J. Dowsett and F. Dowsett-Lemaire, using playback of tape recordings, have demonstrated the closer interrelationship of the African and Grey-headed Broadbills. Both species react strongly to playback of each other's mechanically produced trills, while the clearly higher pitch of the Rufous-sided Broadbill's trill was confirmed when that species' two congeners did not respond to its tape playback. As a result, the authors suggest that, where the African and the Grey-headed Broadbills come into contact, some competition must be involved, despite differences in their habitat preferences, and that, in forest areas with many clearings, it is not clear which of the two the observer should expect to find.

In addition to these wing noises, the African Broadbill produces a loud klaxon-like noise when it hangs from a perch during courtship displays (see Breeding). This sound, too, is thought to be mechanical in origin.

The only other Afrotropical eurylaimid, Grauer's Broadbill, has a feeble "tsi-tsi" or "cree-cree" call which is rapidly repeated three to eight times. This vocalization, which may serve as a contact call, has been likened to that of the Oriole Finch (*Linurgus olivaceus*). In Uganda, this broadbill also emits a high-pitched, monosyllabic "prrrp". It is thought that a very high-pitched, protracted bell-like ringing, recorded in association with breeding, may have been mechanically produced, because it was noted to start when the bird flew and to stop when it landed. This could be significant in determining the kinds of displays which these broadbills may have, particularly if competition with other Afrotropical eurylaimids is involved.

Most of the eleven Asian members of the family are more vocal than their African relatives. Their calls encompass a variety of trills, whistles, squeaks and screams, depending on the species, and several of these eurylaimids have a fairly wide repertoire at their disposal. The most characteristic call of the Green Broadbill is a soft "toi" note repeated at increasing speed to become an upward-inflected trill. This has a distinctive bubbling quality, as do most other calls uttered by this species. The trill is sometimes preceded by a shorter frog-like rattle, which is sometimes given on its own as, probably, a contact call. Soft, mournful whistles, likened to the notes given by green pigeons (*Treron*), as well as a loud "oik", are commonly uttered in the vicinity of food sources. Captives also give variations of the typical bubbling trill in which the first syllable is higher and faster, these versions possibly functioning as both contact and alarm calls, and during display they utter a short series of "goik" notes each of which is accompanied by a bob of the head. A miscellany of cackles, wheezes and whines has also been noted from captive males, as has a "doy-doy-doy-ee-oh" phrase. The latter is believed to be a courtship song, and what seems to be a female version of it is much quieter, with the notes more like "oo" or "ho" and run together more rapidly.

Although it can be quiet for long periods, Whitehead's Broadbill can at other times be the noisiest of the *Calypomena* green broadbills. Its characteristic calls are snoring, grinding or wheezing noises, such as "toc-trrrr", "teek-waaaarrrr" or "chek, rrrrr-trrrr". A variation of these vocalizations, given by three or four males sitting together, was transcribed by the observer as "kerrrrrr" or "kh-khrrrrrr". Rather different notes, reminiscent of those of a woodpecker (Picidae), include a staccato "eek-eek-eek", a short, harsh "tzip" followed by a coarse rattle up to three



**Black-and-red Broadbills.**

like all members of the family, construct a woven, globular hanging nest with a side entrance; the entrance is sometimes disguised with a porch. Nest construction can take up to seven weeks. Whilst the nests are large, the actual nest cavity itself is small, and the head of the incubating bird can usually be seen protruding from the entrance of the nest. Nests are suspended at various heights usually from the fine outer branches of trees, and they commonly hang out over open areas, including water or even roads. Placing nests in exposed situations like this secures them from predatory mammals and reptiles, but it does expose them to damage by strong winds or even flooding. A study of 17 Black-and-red Broadbill nests in Malaysia revealed that six were destroyed before the young reached fledging.

[*Cymbirhynchus macrorhynchos macrorhynchos*, Sukau, Sabah, Borneo.  
Photo: Günter Ziesler]





The **Dusky Broadbill** is a very sociable species. Groups of up to 20 birds sometimes occur, and all group members may engage in building a single nest, as exemplified by this individual that has collected some nesting material. Whether these helpers go on to help with other aspects of the breeding cycle is for the present unclear, and more studies are required. In recent times it has become increasingly clear that co-operative breeding is a strategy favoured by a considerable number of tropical bird species.

[*Corydon sumatranus sumatranus*,  
Panti Forest Reserve,  
Malaysia.  
Photo: Ong Kiem Sian]

seconds long, and, in flight, a rapid phrase of harsh notes. A variety of other calls, ranging from chatters to hissing and wheezing noises, has also been documented for this eurylaimid, along with harsh calls like those of a jay (*Corvidae*), shrill notes, and a trogon-like "go-up" which, if imitated, may attract the species. By contrast, the only call recorded for Hose's Broadbill is a soft cooing, as if from a dove (*Columbidae*), and uttered in conjunction with head-bobbing and bowing actions.

Like the previous two species, the Black-and-red Broadbill is often silent and unobtrusive. Its principal vocalizations are a monotonous and repetitive "tyook", an accelerating series of "pamk" notes, and a rising trill. The last is not unlike a trill emitted by the *Eurylaimus* broadbills, but is slower, softer and shorter. The Black-and-red Broadbill's repertoire also includes grating notes reminiscent of a cicada (*Cicadidae*), short rasps, a hoarse, twanging "cow", a hoarse and grumbling "ka-ka-kraaar-kraaar" descending in pitch, loud churring calls, melodious whistles and, extraordinarily, a snarl that has been compared to that of a puma (*Felis concolor*) at bay. This species' calls are generally quieter than those of other Asian broadbills.

Flocks of Long-tailed Broadbills, on the other hand, are usually noisy, and are often first detected by their loud calls. Typical of these are a series of loud, sharp, descending whistles repeated five to eight times at increasing speed, usually uttered in flight or when about to fly. This whistle has been likened to one given by the Dusky Broadbill, but it is slower and more downward-inflected. A single, sharp whistle, "tseeay" or "seweet", and a rasping "psweep" are uttered intermittently and may be contact or alarm calls, but this species is otherwise relatively silent when engaged in feeding.

In rather stark contrast to the Long-tailed Broadbill, the Silver-breasted Broadbill is normally silent, being most vocal when near the nest. A mournful "ki-uu", likened to the sound from a rusty hinge, is its most typical call. Otherwise, a "pri-ip" serves as contact, while what is probably an alarm call, given in flight or when perched, is a thin, grating, insect-like trill of about six notes.

Loud, cicada-like trills are characteristic vocalizations of the two *Eurylaimus* species. That of the Banded Broadbill is immediately preceded by a brief, sharp whistle, the trill itself being five to six seconds long, increasing in tempo and rising in pitch, with the

final two or three notes dropping in pitch and dying away. This call frequently becomes a duet, as one bird starts up shortly after the first. In some cases, this trill prompts several individuals to call in turn, until a dozen individuals can be trilling, with the notes carrying a long distance. The Black-and-yellow Broadbill's trill is similar to that of its congener but about twice as long, and without the introductory whistle. It begins with some slower-paced, sharp, downslurred notes, but gradually speeds up to end as a quivering trill which terminates abruptly, rather than fading away. Pair-members call alternately, but with the second individual starting before the first has finished, and during bouts of calling one may emit a plaintive, shrill "peep". Various other calls shared by the two species are a single guttural roll and a descending squeak, and a "kor kor kor" given by males at the nest. It has also been pointed out that both species respond vocally to sudden noises such as thunder, a falling tree or the slamming of a car door, but they exhibit a poor response to tape playback.

*Sarcophanops* wattled broadbills, confined to the Philippine forests, appear to call only rarely. The Visayan Wattled Broadbill very occasionally emits an insect-like "tik, tik, t-t-t-t-t-t-t", usually repeated once after an interval of two to three seconds. Although this is very like a *Eurylaimus* vocalization, a similar call is given also by the sympatric Blue Fantail (*Rhipidura superciliaris*). Indeed, the latter's call could easily be mistaken for that of a wattled broadbill. A short, quiet whistle at medium pitch, heard on Bohol, may be a contact call. Although the Mindanao Wattled Broadbill is likely to have a similar repertoire, the only vocalization recorded for it so far is a plaintive whistle, which is probably similar to the presumed contact call of its congener. Wattled broadbills are reported to respond to imitations of the whistled call. Otherwise, perched individuals make loud snapping sounds with the bill, and the wings produce a whirring sound in flight.

Unlike the two Philippine species, the highly social Dusky Broadbill is often very vocal, although it also perches quietly for lengthy periods during the day. Group-members utter a distinctive series of six to eight screaming notes on an ascending scale, "hi-ky-ui, ky-ui, ky-ui", with the "ky" stressed, and the final notes sounding more like "ki-ip". Groups of these birds high in the canopy are usually first detected by these calls. In addition, a shrill, thin, descending "psseoo" and a high-pitched sharp "tsiu"



As in the cases of the other broadbills, the nest of the **Black-and-yellow Broadbill** is usually suspended from a branch some 5-19 m above the ground so that it hangs over an open area. This species has a large, untidy, pear-shaped nest made of twigs and looped grasses, like the long streamers carried by this individual; the nest is typically adorned with lichens. Black-and-yellow Broadbills also seem inclined to enlist additional help with security, for many nests are situated in close proximity to those of wasps and bees.

[*Eurlaimus ochromalus*,  
Panti Forest Reserve,  
Malaysia.  
Photo: Morten Strange]



are commonly heard. Other vocalizations of this large broadbill include a whistled "pee-u" or quavering "ch whit" in flight, a "pepepepepe" given near the nest, and an accelerating series of up to seven "chwoo" or "phwoo" notes. A loud croak and a rattling laugh have also been heard.

### Food and Feeding

Typical broadbills are insectivorous and carnivorous birds, having the broad, hook-tipped bill and wide gape that are required for such a diet. A few species also take fruit and other plant matter as a very peripheral component of their food, although these non-animal items are possibly of local importance, as for Banded Broadbills in Sumatra and Java. The green broadbills in the genus *Calyptomena*, on the other hand, have become specialist frugivores, with a reduced bill size but retaining the wide gape. Notwithstanding this specialization, green broadbills still occasionally include insects in their diet, perhaps opportunistically, but particularly during the breeding period, when a protein-rich diet is beneficial for feeding the young. The least specialized eurlaimid appears to be Grauer's Broadbill, which, according to the available evidence, seems to mix insectivory and frugivory as a normal foraging strategy, although frugivory may be more usual.

The diets of the insectivorous and carnivorous broadbills have not been studied in detail. Analyses of stomach contents, combined with field observations, indicate that insects comprise the bulk of the food consumed. Orthopterans, beetles, both heteropteran and homopteran bugs, and Hymenoptera, as well as their larvae and eggs, are the most frequently recorded items. Small invertebrates, such as spiders, millipedes (Diplopoda), snails and small crustaceans, have also been noted, as well as small vertebrates such as tree-frogs and lizards, and once even a small fish. The evidence suggests that these broadbills, while demonstrating preferences for certain prey items, are basically opportunists, and that in the case of the larger species, in particular, any small animal is likely to be taken. The Black-and-red Broadbill may have a broader dietary range, as it usually forages near water and also occasionally takes small fruits and other plant material, such as leaves. Banded Broadbills in Sumatra and Java

occasionally take fruits, and Black-and-yellow Broadbills sometimes feed on small berries.

All of these species combine aerial sallying and foliage-gleaning in their feeding strategies. They also take prey items while in flight by snatching them off leaves and branches. Foraging is usually carried out in the middle level of the forest, but these broadbills will occasionally descend to the ground layer or extend into the tree canopy in search of food. The Dusky Broadbill appears to be the only eurlaimid with a distinct preference for the upper canopy of the forest, but it will also forage at other levels. Most species forage singly or in pairs, but several, such as the Long-tailed and Silver-breasted Broadbills, form loose feeding flocks outside the breeding season, while the Dusky Broadbill is usually found in small groups (see General Habits). As mentioned previously (see General Habits), the majority of these non-frugivorous eurlaimids have been observed to join mixed-species foraging flocks, and all probably do so at various times.

Grauer's Broadbill seems to be primarily a frugivore. Records of stomach contents have revealed that, whereas some individuals have largely consumed fruits and flower buds, others have also taken insects and, in one case, even a snail. While evidently preferring to eat berries and small fruits, this species has also been observed to take insects in flycatcher-like sallies and by gleaning. It forages singly and in small flocks, with an apparent preference for lower levels, but also extending up into the forest canopy. It also joins mixed-species feeding flocks.

The *Calyptomena* green broadbills are true fruit specialists. Nevertheless, they also catch insects, such as emergent termites (Isoptera), in opportunistic fashion, particularly as a means of supplementing the diet of nestlings. The best-known of the three species, the Green Broadbill, has a preference for figs (*Ficus*), but it will also take any fruits with large seeds, including arillate fruits rich in lipids, such as those of *Eugenia*, *Horsfieldia* and *Knema*, as well as the large fruits of understorey palms and the hard, oily fruits of *Canarium*. Perhaps somewhat surprisingly, Green Broadbills also accept the much smaller fruits, less than 21 mm across, of trees of the families Meliaceae and Myristicaceae (nutmeg). At one study site in Peninsular Malaysia, this species was recorded as feeding on the variably coloured fruits of 21 species of fig; the smallest of these fruits measured 5.4 × 5.9 mm, but the size of fruits consumed ranged up to 32.4 × 27.4 mm. From a brief



radio-tracking study, it was found that two tagged Green Broadbills spent most of their foraging time in or near fruiting fig trees.

The two other green broadbills share a similar preference in terms of the fruits and berries which they eat, and both also take insects on occasion, especially during the period when they are feeding young. One interesting record involved a Whitehead's Broadbill, which was watched as it captured moths attracted to streetlights. Hose's Broadbill also takes leaf buds.

Unlike the frugivorous Asian barbets (*Megalaima*), the green broadbills do not possess sharp cutting edges on the bill. As a consequence, they are unable to mandibulate fruits and must, therefore, swallow them whole, however big they may be. Seeds measuring up to  $24.2 \times 16.2$  mm have been regurgitated by Green Broadbills.

Green Broadbills usually forage and feed in pairs or in small, sometimes widely dispersed groups, displaying a preference for the lower and middle levels of the forest but also briefly entering the canopies of fruiting trees. The fruit is usually plucked from the tree during short flights, but fallen fruit may, exceptionally, be picked up from the ground. Similarly, Hose's Broadbill forages in pairs and small groups, usually at lower levels of the forest. Groups of both of those species sometimes congregate to feed in the same fruiting trees. Whitehead's Broadbill is often solitary and rather shy, but small noisy groups of this species will also gather together at or near fruiting trees, when its loud behaviour is very unlike that of its two congeners. Moreover, individuals within these noisy foraging parties will at times perch on vertical tree trunks, a type of behaviour which, together with certain of the species' calls (see Voice), have reminded some people of the behaviour of woodpeckers. Whitehead's Broadbill has also been seen in the large mixed foraging flocks that are characteristic of the montane forest in which it lives.

A frequently observed foraging strategy of eurylaimids is the characteristic "sit-and-wait" behaviour followed by brief sallies to seize prey, either on the wing or from nearby branches and leaves. It has been suggested that this capturing of prey in the manner of flycatchers is the most common feeding method, but this may be simply because broadbills are more visible during this activity. For several broadbill species gleanings may be more important, but insufficient data are available to determine such preferences. It is not only the insectivores among the family that practise the aerial snatching of food. The *Calypptomena* species also employ this method, seizing both fruit and insects while in flight.

The Eurylaimidae, with their short wings, are not noted for their flying abilities. They use rapid, whirring wingbeats, sometimes in an ungainly manner, in order to pursue their prey. It is not always obvious that any particular perch from which to sally has been preferentially selected, and observers often report that these birds invariably alight on a different branch after having caught their prey. When foraging along branches or among leaves or other clusters of vegetation, broadbills hop or climb, sometimes clinging to vertical surfaces such as the bark of tree trunks, but they do not walk. This may be due to the weak hallux and the partial fusion of the third and fourth toes (see Morphological Aspects), demonstrating a poor adaptation of the feet for perching and, therefore, for walking, especially on narrow branches.

## Breeding

Information on breeding, for the period from courtship activity and nest construction to the laying of eggs, is available to a greater or lesser extent for all eurylaimids. Nevertheless, for many members of the family, the amount of detail is very limited indeed, this being particularly applicable to the two *Sarcophanops* species in the Philippines and the single *Pseudocalypptomena* broadbill in the Afrotropics. Study of the Green Broadbill in captivity has produced a great amount of additional data, some of it confirming earlier speculation on incubation periods and the adults' care and feeding of the young. Combined with this, a few field observations made during the nesting and post-fledging periods help to fill the picture. Unfortunately, no complete study of the breeding of any of the 15 broadbill species in the wild has yet been carried out.

Scattered temporal data relating to specimens in breeding condition, nest-building, eggs, the feeding of young, and so on, have revealed two main themes. While broadbills prefer to nest in the drier months, other factors are involved, as the evidence suggests that breeding periods are extended and can cover all or most months of the year. In the eastern and southern parts of Africa, wetter periods may be preferred. In South-east Asia, the variations from north to south in peak breeding periods coincide with the monsoon seasons. In most cases, this allows breeding in the drier months, with the onset of the rains providing the increased food resources required to feed the young. Even in such conditions, breeding periods can be extensive. For example, breeding records of the Dusky Broadbill extend over ten months, and, although they follow the monsoon pattern in the north of the species' range, populations living farther south commence nesting in the wetter months.

Although the breeding seasons of most eurylaimids are greatly protracted, little is known about the frequency of nesting by broadbills. The Long-tailed Broadbill will raise a second brood in a single season only if the first brood has been lost, and the Silver-breasted Broadbill, if it loses its nest, will start a second nest near the site of the original one. Green Broadbills will replace lost clutches, and it seems likely that other eurylaimids will also do so.

So far as is known, the broadbills are generally monogamous. Although confirmation is lacking, there is some evidence of possible polygyny by the green broadbills in Asia and the *Smithornis* species in the Afrotropics. Two male Green Broadbills observed in the wild performed what seemed to be a ritualized display, lasting about five minutes. The two were perched approximately 1.2-2.5 m apart on small horizontal branches up to 2.5 m above the ground, from where they uttered a continuous low "quit-quit-quit". These calls were accompanied by a quick up-and-down flicking of the head and a rapid flapping of the half-opened wings. During the display, the males changed positions, alternating between facing each other and perching back to back. The elaborate nature of such displays suggests that they may be performed in the context of a social gathering, such as a male lek, and that the green broadbills may be polygynous. This theory is supported by the notable sexual dichromatism of the *Calypptomena* species, the fact that the ornamental tuft is more prominent on the male, and that it is apparently only the female that is involved in building the nest, incubation of the eggs and raising the young.

On Mount Kupé, in Cameroon, a group of Grey-headed Broadbills was observed for five to ten minutes in fairly open forest. At least four birds were present, two of them males, with one female and another unsexed individual, the gathering resembling a lek. The two males displayed from a low horizontal branch over a gradual incline, with the female watching from a slightly higher perch. The males took it in turns to fly in a tight circle, returning to the branch in rapid succession, this display being accompanied by a mechanical trilling (see Voice); the white feather bases of the lower back were conspicuous throughout the performances. When perched, the males also swivelled with the throat puffed out, while drooping the wings so as to highlight yet again the white of the lower back. They also jumped up and down, sometimes doing this alternately in a way which was considered to be similar to that of displaying manakins in the Neotropics.

Broadbills usually suspend their woven, pear-shaped nests from the tips of tree branches or similar conspicuous sites. These characteristic nests can be suspended over forest clearings, but several species commonly locate them above rivers, streams or similar places, and such nests can occasionally be found above roads, paths or ditches, or in mangroves. The widest diversity of nest-sites has been recorded for the Black-and-red Broadbill, which occasionally makes use of such unusual sites as overhead wires and even poles emerging from water. Two attempts made by this species to suspend a nest from telephone wires were unsuccessful because of strong winds, and such sites as poles standing in water are at risk of flooding. Nest records from Peninsular Malaysia found that, of 17 Black-and-red Broadbill nests, six were destroyed before breeding was completed.

The location of the nest varies from 1 m to 30 m above the ground, but is usually in the range of 3-10 m. Afrotropical





This pair, or group, of **Dusky Broadbills** have suspended their nest securely from the tip of a rattan palm tendril. Such tendrils feature an array of medieval-looking thorns, which should effectively deter most predators from approaching the nest from above. Hanging the nest out in the open ensures that the nest cannot be reached by any other "solid" routes. The nest is a large, bulky, domed structure, generally about 30 cm in diameter and some 2 m or more in length. The laborious process of nest construction involves weaving together an array of plant material such as grass, twigs, leaves, moss and roots to form the main structure. The interior is lined with green leaves, grassy fibres and hair-like roots. The final stage involves the addition of adornments to the nest and building the long, dangling tail that is characteristic of so many broadbill nests. Typically, nests are adorned with leaves, spiders' egg-bags, cocoons and caterpillar excreta, all fixed in place using cobwebs. Nest construction time varies within the family from 5 days to 7 weeks. The end result is an effectively camouflaged nest that is well out of the reach of most mammalian and reptilian predators.

[*Corydon sumatranus*  
sumatranus,  
Panti Forest Reserve,  
Malaysia.  
Photos: Morten Strange]





#### Silver-breasted

**Broadbills** are sociable birds and regularly enlist helpers at the nest. Members of the group assist in nest construction and they sometimes also help with both incubation and the rearing of the young. Nest construction takes 5-10 days but adornments are commonly added for many days after the incubating birds have taken up occupancy. The nest of this species tends to look rather neater than those of many other members of the family.

[*Serilophus lunatus stolidus*,  
Kaeng Krachan  
National Park, Thailand.  
Photo: Bernard van Elegem]

broadbills usually locate their nest 1-3 m above the ground, though at times very much higher, and normally away from open areas. In some cases, nests are hidden within the canopy foliage, as recorded for the Black-and-yellow Broadbill. In Borneo, the latter species often places its nest near bees' nests or in thorny trees, while the Banded Broadbill has also been seen to nest near a bees' nest, and the Black-and-red Broadbill near a wasp nest.

The practice of placing nests in conspicuous but apparently inaccessible sites is obviously an adaptation providing effective protection against nest predation by mammals and reptiles. The renowned ornithologist E. C. Stuart Baker once observed a rhesus macaque (*Macaca mulatta*) attempting to stretch over to a Long-tailed Broadbill's nest, but, just when the nest was nearly in its grasp, it slipped and fell into the stream below.

Eurylaimid nests have been variously described as resembling a pear, a gourd, a bag, a purse, a ball and a dome. The Green Broadbill builds its gourd-shaped nest by attaching it across branches, rather than suspending it from a branch tip, and this species is otherwise notable for the small size of its nest-cavity, requiring the female to sit with her head protruding outside. The other *Calypomena* species build an apparently similar structure, although possibly with a bigger nest-cavity, but they are reported to suspend the nest from a branch tip. All nests are tightly woven from a variety of materials, including grass strips, vines, small sticks, bark strands, leaf fibres, creepers, rootlets, fungal hyphae and moss, while the nest-chamber is lined with softer material, such as leaves, grassy fibres and hair-like roots. One nest of the Grey-headed Broadbill was constructed entirely from black fungal fibres, while others were built predominantly with green moss. The entrance hole, at the side, is normally more or less concealed by a "porch" or step. Some nests have been described as untidy, but this is usually the consequence of the amount of nest decoration that is added, including the drooping "tail", which can be relatively quite long. Even though nests are quite frequently placed in conspicuous locations, the nest decoration provides effective camouflage among vegetation hanging from trees. Decorative materials include lichen, green moss, egg cases of spiders, caterpillar excreta and cocoons, all held together by cobwebs, plant stems and tendrils, with the biggest "tails" attached to the most decorated nests. One Dusky Broadbill nest was decorated with the runners of an epiphyte, providing a covering of small living, green leaves.

Few precise data are available on the time taken to construct the nest. In captivity, a female Green Broadbill completed her nest in five days, the male taking no part in the work. In the case of the Silver-breasted Broadbill and the Long-tailed Broadbill, both sexes co-operate in building the nest, sometimes assisted by helpers. For the former, nest construction has been estimated to take five to ten days, whereas the latter species can take about three weeks to complete the task. One pair of Black-and-red Broadbills was thought to have required seven weeks to construct its nest, even though both partners participated in the work; this particular nest, however, was slung beneath telephone wires, and high winds may have been a problem for the birds. At another nest of this species, during the later stages of construction, an adult was seen to remain inside the nest-chamber while its partner gathered material; in this instance, it seems possible that the broadbill inside the nest was engaged in shaping and tidying the inner cavity. Long-tailed Broadbills are known to reuse nests over several seasons.

Three broadbill species are known to breed with the assistance of helpers at the nest. A pair of Long-tailed Broadbills may be assisted in the construction of the nest by up to five helpers, which possibly also take part in the incubating of the eggs and the feeding of the young. A similar situation applies to the Silver-breasted Broadbill, although the number of potential helpers is uncertain. In the gregarious Dusky Broadbill, the whole group of up to ten or more birds takes part in nest construction, but it is not clear if all individuals also assist with incubation and brood-feeding.

Observations on captive Green Broadbills have revealed some intriguing aspects of the species' breeding behaviour. The female mentioned two paragraphs above, after having spent five days in building her nest, proceeded more or less to ignore it for two days, during which time the male displayed vigorously to her with deep head-bobbing movements while ruffling his head feathers. Both then perched across a branch, making similar deep head-bobbing movements; they frequently perched so close together that they almost touched one another, and each one ruffled the back feathers. These displays continued for three days, when the male then fed regurgitated food to his mate, this being followed by copulation, with the first egg laid three days later. The deep head-bobbing has been seen to be performed by a number of captive Green Broadbills in different collections. In





The nest of the **African Broadbill** is a typically untidy bag suspended from a horizontal branch roughly 1-2.5 m above the ground in dense, well-shaded forest understorey. Nest size varies considerably from about 20 cm to 100 cm depending on the length of the dangling "tail".

Two or three small, glossy white eggs are laid, each being rather elongated with a point at one end. Only females have been recorded incubating. In fact, the breeding biology of this widespread and locally common species remains surprisingly poorly known, but it is thought to be monogamous and territorial.

[*Smithornis capensis capensis*, South Africa.

Photo: E. & D. Hosking/FLPA]



some cases, a captive male has used a particular set perch and, when approaching such a perch, the male has sometimes adopted a slow, butterfly-like flight with the body held upright; the same flight is occasionally used when approaching the female.

In another display, the male, usually when close to the female, assumes a hunched, "neckless", posture, crouching very low, and raises the distinctive tuft of loreal feathers to reveal the tiny patches of bright yellow and black feathers just in front of the eyes. During this display, he repeatedly flashes the wings and rapidly opens the bill to the fullest extent, exposing the orange-pink mouth. A captive female has been seen to respond to the gaping male by crouching on her perch, with the tail held horizontally, the half-opened wings slightly shivering, and the body feathers fluffed up, whereupon the male, with fluttering wings, mounted her and copulated for three or four seconds before hopping off and perching nearby.

As an immediate precursor to the initial crouching and wing-flashing display, the male usually flies at high speed in a very regular pattern around the aviary. This ricocheting flight (see also General Habits) may also be followed by courtship feeding, in which the male regurgitates a berry and offers it to the female. This is sometimes repeated up to four times, with the female accepting at least three of the berries. The perched female will at times solicit courtship feeding by fluffing up the body feathers and shivering, with low-intensity head-bobbing; her mate's normal response to this is to offer food, and in every observed case the female accepted this.

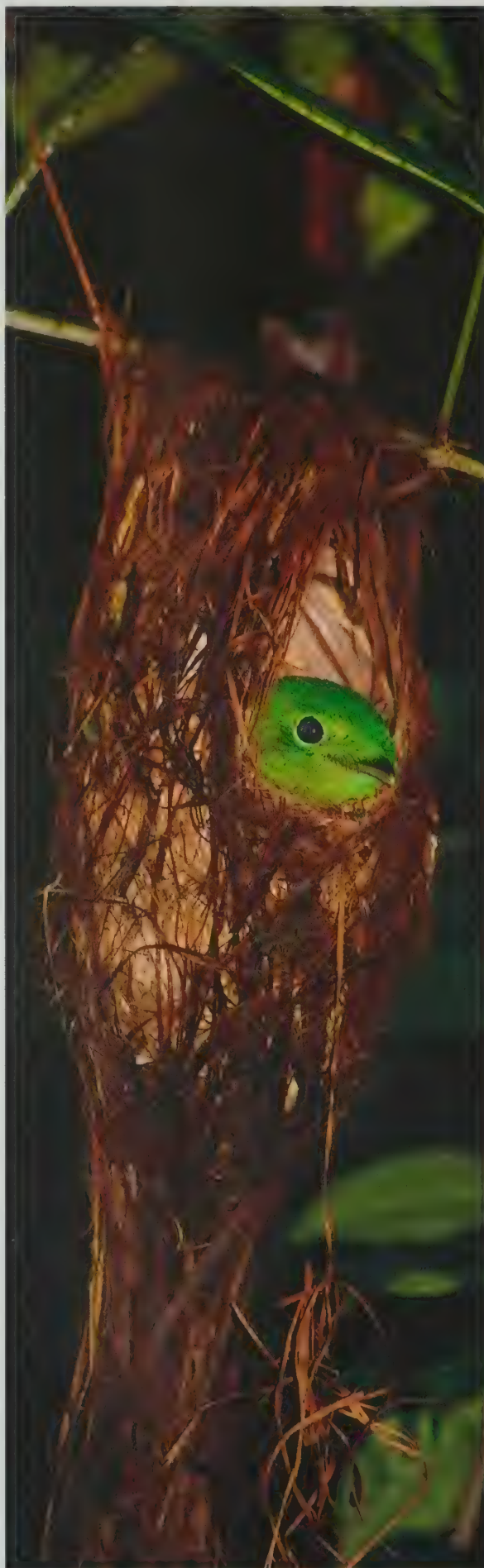
An apparent courtship display by the African Broadbill was observed in September in Mozambique. Two individuals of this species perched about 45 cm apart on a low horizontal branch. Both performed wing-flicking, before swinging downwards and hanging from the branch; while thus suspended, and still wing-flicking, they made loud klaxon-like sounds, evidently produced by the outer primaries, for a period of half a minute or so, after which they righted themselves. The two then flew off and perched separately, about 100 m apart.

Despite its taxonomically close, congeneric relationship to the African Broadbill, the Rufous-sided Broadbill has a courtship display which is very different and which usually occurs between display-flights. The male approaches a female and, with his head turned away from her, utters several "huiiii" calls. Holding the body horizontally, with the legs bent and the bill pointing upwards, he then puffs out his plumage, thereby making the white mantle and the orange breast-side patches conspicuous. With the wings drooping, he opens and closes them in a rhythmic fashion, and from time to time flicks them high above the mantle. The display is terminated by the male making a series of short, excited jumps in front of the female, these being accompanied by a song-like sequence of rhythmic calls.

In the forests of Peninsular Malaysia, the courtship and mating behaviour of the Black-and-yellow Broadbill has been observed in February. This was witnessed in the early afternoon, on a day when the species had been heard calling frequently in the morning. A calling male was watched as it alighted on a small horizontal branch close to the trunk of the tree, and just above another branch on which a silent female was perched. The male proceeded to extend his wings slowly sideways, horizontally and almost to their full length, where he then held them while moving his tail from side to side in an exaggerated manner; at the same time, the female shivered her half-opened wings. After a brief period, the male flew down and copulation took place, but both broadbills then flew to another perch about 3 m away and resumed copulation. After this, the male moved about 30 m from his mate and slowly raised and lowered his wings for a short while, before the two flew away.

The eggs of the *Smithornis* broadbills are rather elongated, with a point at one end, glossy white in colour and rather small. Those of the African Broadbill measure no more than 19.24.5 × 14.5-16 mm. *Calyptomena* eggs are similar in shape and colour, though generally more creamy-tinted, but are distinctly larger, with maximum dimensions of 36.8 × 25 mm.

Black-and-red Broadbill eggs are dull, with no gloss, and vary in shape, size and colour: they are oval, either broad and short or long and blunt, measuring 25.29.3 × 18.2-20.7 mm, and occur in



**Female Green Broadbills** take sole responsibility for nest construction, incubation and brood-rearing. The nest is a relatively simple structure; indeed, in captivity one nest took just five days to construct! The nest is hung from a horizontal branch low in the understorey, as is the case with *Smithornis* and *Serilophus* broadbills. It usually remains unadorned with the sort of camouflage material that is typical of many broadbill nests. One to three elongated white eggs are laid, and incubation takes 17-18 days. After hatching, the young remain in the nest being fed by the female for a further 22-23 days before fledging. Rather oddly, males possibly remain in close attendance, as they have been observed undertaking injury-feigning displays which may serve to lure potential predators away from nests.

[*Calyptomena viridis*,  
Gunung Palung  
National Park,  
West Kalimantan, Borneo.  
Photo: Tim Laman]





**Long-tailed Broadbills** lay 4-8 eggs that have an elongated oval shape and are slightly compressed at the smaller end. They average 27.4 x 19.4 mm in size. Egg colour is variable, ranging from pure white to deep pink marked with blotches of shades of pink, red and reddish-brown, with smaller lilac-grey markings; all markings are usually denser at the broader end. Incubation and brood-rearing in this species may be shared between the parents and helpers from the same social group or flock.

[*Psarisomus dalhousiae*.  
Photo: Larry Tackett/DRK]

three basic colour types. The commonest type is pale pink and covered all over with dull pale reddish-brown freckles, which sometimes form ill-defined blotches; others are more or less white with claret or purplish-red marks; the third type is also white, but with fewer and darker, almost purple-black, markings. The eggs of Long-tailed Broadbills, which are similar in size to those of the preceding species, have a rather elongate oval shape, slightly compressed at the smaller end. Their colour ranges from pure white and glossy to deep pink and more or less unglossed, the latter type having pink, red and reddish-brown blotches, with smaller lilac-grey markings that are usually most dense at the broader end. The Silver-breasted Broadbill's eggs are normally a short, blunt oval, rarely somewhat elongate, but not pointed, and they measure 22.2-26.7 x 16.2-18.1 mm; those of the nominate subspecies are glossy white, faintly cream-tinged, with sparse tiny reddish-purple speckles, which are denser at the broader end, whereas those of the Himalayan race *rubropygius* are pinker and have larger spots.

*Eurylaimus* broadbills lay smooth, faintly glossy eggs of a narrow, fairly regular oval shape. Those of Banded Broadbills from west Java are off-white to greyish-cream in colour, or occasionally pinkish-clay, and are well covered with irregular small markings, mostly dull rusty-brown but some lavender-grey, especially at the blunt end; the dimensions are 27.6-31.5 x 20.1-22.2 mm. Eggs from elsewhere in the species' range are white to pale creamy, with deep purple, dark reddish-brown or, occasionally, pale reddish-lavender spots and freckles; they are not unlike the eggs of some drongos (*Dicruridae*). Ten eggs collected in places away from Java were smaller, measuring 26.1-28 x 17.1-20 mm. The few reported eggs of the Black-and-yellow Broadbills are smaller still, at 23.5 x 16.5-17 mm; they are mushroom-pink and copiously covered with brown and purple-brown flecks, these marks forming a dark ring where concentrated around the broader end. They have also been described as being identical to the eggs of the Banded Broadbill.

Nothing is known about the eggs of the two wattled broadbills in the Philippines, nor of those of Grauer's Broadbill. Indeed, the breeding biology of all three species remains to be discovered. Finally, the Dusky Broadbill's egg is a broad, almost elliptical oval, smooth but glossless. Its ground colour varies from pale reddish to dull cream, normally with numerous reddish-brown freckles that may almost obscure the ground colour, though two

had larger blotches and underlying marks of pale lavender; the eggs measure 27.2-34.9 x 20-24 mm.

Clutch sizes of the Eurylaimidae range from one to eight eggs, but in the great majority of cases only two or three young are raised in any single breeding attempt. In a captive pair of Green Broadbills, the female laid the first egg three days after copulation, with the second following three days later, but, as she failed to incubate these eggs properly, they were removed. Three weeks later, two more eggs were laid, with an interval of two days between them. All observations of this species indicate that the female alone incubates, the period in captivity being recorded as 17-18 days; the young are fledged when 22-23 days old. Data on the incubation and fledging periods of other broadbills are virtually non-existent. The Long-tailed Broadbill has been said to incubate its eggs for more than 14 days, which seems quite likely to be the case.

Apart from the few instances already mentioned here, such as the Long-tailed and Silver-breasted Broadbills, which have helpers at the nest, and the co-operatively breeding Dusky Broadbill, the roles of the sexes in the various breeding duties are very poorly known. In the case of the Rufous-sided Broadbill, the female alone incubates but both sexes feed the chicks. The male Black-and-red Broadbill probably shares the task of incubation with his mate, but this remains to be fully confirmed.

A most intriguing injury-feigning display is sometimes performed by the male Green Broadbill in the wild. During this display, usually given near the ground and presumably near the pair's nest, the broadbill can appear to have become caught up in a spider's web or to be "stuck" to its perch, all the time screaming with wide-open bill and with frantic wing-flapping, and giving every impression of being wounded. If approached, the displaying bird flies a short distance to another perch and continues the performance.

Observations of Banded Broadbills in Borneo revealed a rather long period of post-fledging dependency. Even 13 weeks after fledging the young were still receiving 70-80% of their food intake from the parents, the proportion dropping to 20-30% at 20 weeks. Again in Borneo, a study of six Green Broadbill nests gave a success rate of 0.5 young fledging per pair.

Broadbills are probably the hosts of several species of parasitic cuckoo (*Cuculidae*), but little has been recorded on this subject. One nest of the African Broadbill in Zimbabwe contained





### Movements

Tropical forest birds are normally resident species which make only limited local movements, and the broadbills accord with this general pattern. There are a few instances in which wider movement has been noted, but this has generally been reported as being unusual, one example being that of Dusky Broadbills wandering to higher altitudes. Extremely dry conditions can cause birds to wander well outside their normal range. For example, in Borneo, during the severe drought conditions of 1997/98, a Whitehead's Broadbill, normally a montane bird, was found at an altitude of only about 75 m, in forest far from the mountains. This represents a very exceptional record, but it is nonetheless likely that other eurylaimid species could be affected in comparable ways by such extreme weather conditions.

In the Himalayan foothills, both the Long-tailed and the Silver-breasted Broadbills undertake seasonal altitudinal movements. With the arrival of winter, and a concomitant reduction in food resources as a result of the cold weather, these birds move to lower altitudes, even on to the nearby plains, returning to higher regions in the following spring. The extent of such movements by these species is poorly known. In the western parts of their ranges, both are now uncommon, scarce, rare or quite localized, and they have disappeared altogether from some regions. It is possible that populations normally favouring higher altitudes have been adversely affected by habitat changes in the lower-lying wintering areas.

The Green Broadbill is probably a locally nomadic bird in association with the seasonality of its preferred fruiting trees. A brief study of four radio-tracked individuals of this species indicated movements covering at least 2.5-6 ha per day, with one female ranging over about 13 ha in seven days and a male covering about 24 ha in six days. Movements of this kind may be more extensive if the available food resources are reduced in some

**Silver-breasted Broadbills** sometimes enlist helpers to assist in the business of rearing their young. A steady supply of invertebrate prey is required to raise the young to fledging, after which the hard work continues. The post-fledging dependency period appears to be long in broadbills. Observations of Banded Broadbills (*Eurylaimus javanicus*) in Borneo have demonstrated that even 13 weeks after fledging young birds were still receiving 70-80% of their food intake from the parent birds. Eventually, this proportion dropped to 10-20%, after 20 weeks.

[*Serilophus lunatus rothschildi*, Maxwell Hill, Malaysia. Photo: Ong Kiem Sian]

an egg which, from its size and appearance, was considered to have been laid probably by a Barred Long-tailed Cuckoo (*Cercococcyx montanus*). Eggs of unidentified cuckoo species have also been found in nests of the Silver-breasted Broadbill in Myanmar and Sumatra. Most reports of nest parasitism on eurylaimids, however, relate to the Black-and-yellow Broadbill in Peninsular Malaysia, from where separate records involve a pair of adults feeding a young Indian Cuckoo (*Cuculus micropterus*), adults feeding an unidentified cuckoo fledgling, and a nest containing an unidentified cuckoo egg.

In summary, broadbills, in common with many tropical birds, build camouflaged nests in situations designed to minimize predation, they produce usually small clutches and, where breeding seasons are protracted, they may produce multiple clutches, yet the survival rate of nestlings is apparently poor. Although most eurylaimids were in earlier times considered to be abundant, the implication appears to be that, in optimal circumstances, the replacement rate of individuals is sufficient to maintain population levels. What these levels require further investigation, as the few surveys which have been undertaken suggest that broadbills have a relatively low population density. While a study in Borneo found only Green Broadbills to be present at all sites in all survey periods, this may well be due to the greater mobility of frugivorous birds following the random fruiting of favoured food trees.

Ringling studies carried out in Peninsular Malaysia have indicated that in the wild the Green Broadbill can live for at least five years, and probably much longer. A captive Green Broadbill is known to have reached an age of at least 19 years. In addition, a Black-and-red Broadbill ringed as an adult in Malaysia was recaptured five years later, by which time it would have been at least six years old. It is likely that all broadbill species can be long-lived birds. Indeed, various long-term ringling projects around the world have revealed that small forest-dwelling birds can have a longer life expectancy than was formerly believed to be the case.



In general, it seems that broadbills seldom reuse nests in subsequent breeding seasons, although the Long-tailed Broadbill (*Psarisomus dalhousiae*) has been known to return to the same nest during several successive seasons. Perhaps further field observations will show this practice to be more widespread than is currently thought. In some cases, such well-built, relatively secure constructions may be taken over by other species for nesting. Here a Little Pied Flycatcher (*Ficedula westermanni*) has taken up residence in an old Silver-breasted Broadbill nest, whence the diminutive female flycatcher can be seen peering out.

[*Serilophus lunatus rothschildi* (nest), Fraser's Hill (1400 m), Malaysia. Photo: Morten Strange]



**Whitehead's Broadbill** is a restricted-range species found in a few montane areas in northern Borneo.

Although patchily distributed, it appears to be common in suitable habitat. Forest cover at higher altitudes in Borneo is still extensive and remains largely intact. For this combination of reasons, the species is considered secure for the time being.

[*Calypturnesia whiteheadi*, Borneo.

Photo: Roland Seitre/Bios]



regions. For example, four Green Broadbills netted in December 1968 at 1300 m on Fraser's Hill, in Peninsular Malaysia, were at least 400 m above their normal altitudinal limit in that part of their range.

For the family's two other frugivores, Hose's Broadbill and Whitehead's Broadbill, no details are available to indicate whether any movement takes place within their normal montane ranges. Further, the extent of the occurrence of Hose's Broadbills at lower elevations is unknown. In both cases, however, it seems possible that known gaps in their respective distributions, with the birds being absent from apparently suitable areas, may be due not simply to local absences of favoured food trees, but to an incomplete understanding of the movements of these broadbills. On the other hand, many birds inhabiting tropical forest have patchy distributions, and this may be the case for these two eurylaimids.

### Relationship with Man

Broadbills share a dependency on the forest environment not only with other animals, but also with the indigenous peoples who rely on this natural habitat for all their resources. Indirectly, this can be seen through the contribution made by the birds to the control of invertebrate populations and to the dispersal of tree seeds. Recent changes in human activity have resulted in an expansion in agriculture and other forms of land use, at the expense of the forested areas that are essential to the survival of the birds and other organisms.

Seed dispersal by frugivorous birds is known to play a significant role in the viability of populations of important food plants. The Green Broadbill, for example, feeds on a diversity of fruits, with a preference for figs (see Food and Feeding). Apparently, a more crucial role, and one in which its specialized wide gape is important, is that of the consumption of the large fruits of understorey palms and perhaps other important understorey plants. The long-term loss of these birds, or a severe reduction in their numbers, could prove to be detrimental to the survival of such plants, and this would have a reverberating impact on the ecology of the forest. One consequence may be the loss of plants used by humans for food or exploited in other ways.

A more direct relationship with man is evident when the birds themselves are considered as potential food resources. In the more remote regions of tropical Asia, broadbills, along with many other birds, are trapped for consumption as part of the diet of the local people. This kind of exploitation, however, is unlikely to have any significant adverse effects on the population levels of any

species, except where it is combined with habitat loss; this can be a very dangerous combination.

Several broadbills are known to turn up in cagebird markets in South-east Asia, as can virtually any bird species. A popular reason for keeping birds as pets is for the enjoyment of hearing their pleasant songs, but the eurylaimids, with their limited vocal abilities (see Voice), are not prized as songbirds. Perhaps their bright colours are an attraction. A more likely explanation for trapping and selling broadbills, however, is that these birds are eaten. It is not known if any species of eurylaimid offers any contribution to indigenous medicine, which is another major reason why tropical animals are captured.

The recent phenomenon of an expanding network of global birdwatchers has provided indirect benefits for tropical birds. Broadbills are one of many avian groups that are of particular interest to visiting ornithologists, who help to contribute to the economies of local human communities and, at the same time, offer long-term viability for the establishment and management of protected areas. There is great potential here for both the local people and the birds.

### Status and Conservation

Among threatened natural environments, tropical forest rates very highly, particularly because its continuing loss has been well documented and publicized. The destruction of tropical forest is also of great concern because it is well known that biodiversity is greatest by far in these regions, and there is still so much to be learnt about the plants and animals affected by the disappearance of this habitat. Broadbills provide an excellent illustration of this. All eurylaimids depend on forest. A few appear outside forested habitats for brief periods, or as part of their daily foraging strategies, but only if forest is present nearby. Only one, the African Broadbill, occurs widely outside tropical forest, but this species is also subject to habitat loss in those areas. As with most species inhabiting tropical forest, knowledge of these birds is limited.

A great deal was discovered about broadbills by ornithologists active in the period spanning roughly the 1870s to the 1940s. Additions to this knowledge base have come mostly through an increase in observations during the final two decades of the twentieth century. Much of this recent activity has focused on the monitoring of changes in distribution and status. While some additional insight has been gained into the habits and nesting

**The Black-and-yellow Broadbill** is currently listed as Near-threatened.

Like many broadbills, it depends on lowland rainforest, a beleaguered habitat. Broadbills show little ability to adapt to habitat degradation and disturbance, and local extinctions have occurred as a result of logging and other activities. Continued forest damage, together with an increased knowledge of the ecological requirements of lowland-forest broadbills, is sadly likely to push more broadbill species on to the lists of birds of conservation concern.

[*Eurylaimus ochromalus*. Photo: Cyril Laubscher]







*Hose's Broadbill* occurs in a few mountainous areas of northern Borneo. Listed as Near-threatened, this species' preference for forest on sub-montane slopes means that it is not immediately threatened, although these areas are increasingly being subjected to logging activities. This species is one of the least-known of all the broadbills.

[*Calyptomena hosii*,  
Lanjak-Entimau  
Wildlife Sanctuary,  
Sarawak, Borneo.  
Photo: Doug Wechsler/  
VIREO]

activities of eurylaimids, particularly those of the rarer species, no broadbill has been studied comprehensively in the wild.

It is hoped such studies will be carried out before too long, but the overriding concern is the long-term survival and conservation of these birds. All species of broadbill are found in protected areas in some parts of their ranges, but too many populations remain under threat. Over their entire ranges, all members of the Eurylaimidae are now regarded as uncommon to rare, and, while some are locally common, this may be simply because they occur in forests that are yet to be exploited. The adaptability of these birds to forest degradation appears to be limited, and severe loss of habitat can lead to local extinctions.

The worst example of local extinctions concerns the island of Singapore, at the foot of the Malay Peninsula. At least five eurylaimid species once lived there. The last record of any one of them involved a sighting of the Green Broadbill in 1941, and that species probably disappeared soon after. It was claimed that two other species had survived until 1950, but both had actually disappeared by the 1940s at the latest, and probably well before then. Broadbill populations in Singapore were probably always small, and it is worth noting that there have been several other avian extinctions there, indeed well before the island became the extensively built-up environment that it is today.

Moreover, broadbills appear to be vulnerable on small islands in general. Several eurylaimids may have occurred on Pinang, off West Malaysia, but, if so, they disappeared long ago. Some persist on small islands in Indonesia and the Philippines, but recent records exist for only a few of these, such as the Black-and-yellow Broadbill on Pulau Laut, off south-east Borneo. In other instances, the Dusky Broadbill can no longer be seen on the south Thailand island of Phuket, and the Black-and-red Broadbill may already have gone from the Mergui Archipelago, in south Myanmar.

In the most recent catalogue of the world's threatened birds, published in 2000 by BirdLife International, three broadbills are listed as being threatened. These are Grauer's Broadbill and both Philippine species of wattled broadbill, all three of which are classified as Vulnerable. Of the remainder of the Eurylaimidae, it is pointed out that several others in South-east Asia are potentially threatened, a situation that applies to many tropical birds which are either wholly or mainly confined to

lowland forest. The book repeats a depressing message to justify this likelihood. In western Indonesia, for example, all lowland forest may have been destroyed by the year 2010, and a similar scenario is probably applicable elsewhere in South-east Asia. As a consequence, three eurylaimids are placed in the conservation category of Near-threatened. These are the Black-and-yellow Broadbill and two of the *Calyptomena* species, the Green Broadbill and Hose's Broadbill.

Compared with the situation in Asia, the prospects for the immediate future of the African fauna may not be quite so worrying. While it has been acknowledged that all remaining tropical forest in Africa is now part of logging concessions granted to various companies in different parts of the world, the circumstances in certain regions are perhaps not so desperate. In July 2001, for example, a German logging company announced that it had given up its lease on a 60-km<sup>2</sup> concession so that the area could be added to the Nouabale-Ndoki National Park. Moreover, while retaining leases on 8000 km<sup>2</sup> of forest elsewhere in the northern Congo, the company has also agreed to limit hunting by logging crews and to reduce damage incurred during timber-harvesting.

Grauer's Broadbill has a very restricted and fragmented range. Although it appears to be locally common, the area in which it occurs is under increasing pressure from commercial logging, mining, agriculture, hunting, and the political volatility of a region affected by the presence of thousands of human refugees from neighbouring regions. Its stronghold is thought to be the Bwindi-Impenetrable Forest National Park, in south-west Uganda. Otherwise, it occurs only in easternmost Zaire, where the Kahuzi-Biéga National Park, west of Lake Kivu, offers much suitable habitat for the species, but is under threat. The Itombwe Mountains, of vital importance for this broadbill and for many other remarkable species confined to this African escarpment, remain relatively intact, but they are not protected by any legislation.

Both of the Philippine wattled broadbills face the same threats of deforestation, mining activities, agricultural expansion, soil erosion and forest fires, a fate shared with many Philippine endemics. There are recent records of the Mindanao Wattled Broadbill from two protected areas, Mount Apo Natural Park and the island of Siargao; the species may also survive in the Mount Hilong-Hilong Watershed Reserve, Basilan National Biotic Area and Mount Matutum Forest Reserve, for the last of which the



status of national park has been proposed. The Visayan Wattled Broadbill occurs in only one protected area, the Rajah Sikatuna National Park, on Bohol, where it appears to be safe for the time being. These two species are the least-known of the Eurylaimidae, and information on their habitat requirements is essential for the drawing-up and promoting of further conservation plans. The Visayan Wattled Broadbill, for example, is considered to be a characteristic component of forested limestone outcrops, but it is more than likely that this is a relatively recent phenomenon, the result of a massive reduction in suitable areas of forest elsewhere within the species' range.

Some concern could be expressed for a number of broadbills which have not been listed as being at any current risk. The African Broadbill, for example, is now scarce and localized in the eastern and southern parts of its range, where it has either disappeared from a number of areas or become very rare. In West and Central Africa, this species and its two congeners are considered to be rare to locally common, but perhaps under-reported from many regions. This could be a reflection of the fact that surveys in several areas have suggested that their population densities are apparently low.

Over the wide ranges occupied by the Long-tailed and the Silver-breasted Broadbills, both have become uncommon to rare and local, and may even have disappeared from many areas. In some parts of South-east Asia, however, they appear still to be locally common. Apart from the pressures of habitat loss, both are known to turn up in cagebird markets, and trapping may be exerting undue pressure on many populations. These two broadbills are becoming rare and isolated in Indochina and very rare in China.

Of the remaining eurylaimids restricted to South-east Asia, all survive in greatly reduced numbers, and are now considered uncommon to scarce and local over the northern parts of their ranges. Broadbills living in montane forest are still relatively secure, although one of the two *Calypotomena* species that are found only in Borneo, Hose's Broadbill, is, as mentioned above, classed as Near-threatened. Of those found in lowland forest, most remain uncommon to locally common in the southern parts of their

ranges, but this habitat is seriously threatened in many areas and is likely to diminish markedly over the next decade or so. There is some evidence to indicate that broadbills will, to a limited degree, tolerate logged forest, but not where it has been severely degraded. The Black-and-red Broadbill occurs in a variety of forest types because of its preference for the proximity of water (see Habitat), but, while entering degraded areas, it requires the presence of scattered tall trees and it remains near rivers and streams. Although this species is still locally common in areas in which much of the forest is degraded, it has nevertheless also disappeared from other, apparently suitable habitats, as is the case in Sumatra.

The tolerance of forest birds towards the deterioration of their environment varies greatly. In the case of the broadbills, observations have demonstrated that several species are able to accept a small amount of disturbance and that some agricultural activity creates foraging opportunities for them. Severe degradation of forest, however, and in particular that resulting from commercial logging operations, invariably results in the decrease of populations. When regrowth takes place, broadbills will to some extent re-establish themselves in such areas, but at reduced numbers in the short to medium term. In one study, for example, the population of Green Broadbills remained at a low level even 22 years after recolonizing a previously degraded forest.

The success of BirdLife International in co-ordinating a database not only on threatened birds, but also on all birds of potential conservation concern, offers some hope for the future. The establishment of a network of protected areas through the Endemic Bird Areas assessment of remaining habitat, in combination with an expanding understanding of biodiversity as a concept and in conjunction with the input of sustainable-development programmes, appears to be having positive results.

Of all the many threats facing tropical birds such as the broadbills, the greatest must surely be that of the commercial logging of natural forest in so many regions of the world. Moreover, in combination with this activity, and frequently as a direct result of it, areas which were hitherto inaccessible are being opened up to other forms of exploitation such as legal and illegal mining, both of which are destructive in their own ways. Fire is also a significant threat, as demonstrated in recent years in Indonesia, where uncontrolled burning wiped out large areas of natural vegetation. It is well known that many of these fires were started deliberately as a means of clearing up the untidy aftermath of logging operations, in an attempt to "justify" logging as an acceptable activity. The truth is, in fact, that illegal logging imposes one of the most serious threats to the world's fauna and flora, having major impacts throughout the tropics.

The most recent major setback in efforts to protect the world's wildlife is associated with the political "war" on terrorism, started in September 2001. This could have indirect but severe consequences for conservation. In Indonesia, for example, threats made against foreigners as a protest against this war have caused a cessation of co-ordinated protected-area management programmes in the country. One can only hope that any such disastrous misunderstandings are short-lived.

While the future may seem a bleak one for tropical forests, especially those in lowland areas, the response of conservation bodies is very active. Indeed, there is a sufficient glimmer of hope that a system of protected areas, in particular, will ensure the survival of all tropical bird species, even if not all populations of them. If this proves to be the case for the broadbills, then it is possible that ornithologists will, at last, have the time and the opportunity to learn more about these fascinating birds.

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#### The Visayan Wattled

**Broadbill** is one of three threatened members of the family. It is considered Vulnerable. Restricted to lowland forest on three islands in the Philippines, it has been recorded from just one site since the 1980s, although at least this was in a protected area. Forest loss on all three islands where the species is, or was, found has been so great that the species now has a very small potential range and seems to be facing a fairly bleak plight.

[*Sarcophanops samarensis*, Rajah Sikatuna National Park, Bohol, Philippines. Photo: Pete Morris]

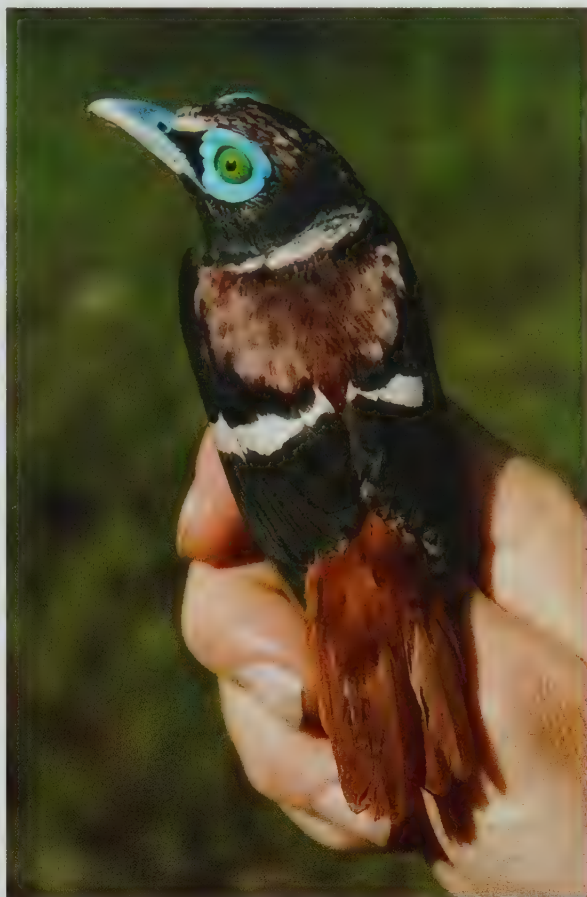






PLATE 1

inches 4  
 cm 10







**Food and Feeding.** Insects. Orthopterans and metallic beetles recorded on Bioko. In Cameroon, recent observations of birds catching grasshoppers, crickets, cicadas (Cicadidae) and a butterfly, and a female seen with bill full of caterpillars during breeding season.

**Breeding.** Breeding coincides with the dry season: Nov-Apr in Cameroon, Dec on Bioko, and Feb-Sept in Zaïre (few records, season probably as long as for *S. rufolateralis*). Nest a bag of plant fibres, moss and lichen with long hanging "tail", lined with dry leaves, or sometimes built entirely of fine black fungal fibres (*Marasmius*) and dried leaves, or of green moss, or of mosses with old fern strands and lichens: suspended from a small branch 1-16 m above forest floor. Clutch 2 eggs, sometimes 1; incubation and fledging periods unrecorded, but expected to be much as for *S. rufolateralis*.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Poorly known. In parts of Cameroon where it has been studied it is not uncommon, and is apparently evenly distributed throughout the forest. Rare on Bioko. Presence confirmed from only one site in N Gabon and one site in Equatorial Guinea (Mbini): first found in Nigeria in 1995. Status in E Zaïre unclear, but published records suggest that it is not uncommon. This species is able to survive in old logged forest, but seems unable to tolerate seriously degraded habitats.

**Bibliography.** Basilio (1963), Bates (1905), Borrow & Demeý (2001), Bowden (2001), Chapin (1953), Chittenden (1999), Dowsett & Dowsett-Lemaire (1993, 1997), Dowsett & Forbes-Watson (1993), Dowsett-Lemaire & Dowsett (1996, 1998, 1999), Fishpool & Evans (2001), Keith *et al.* (1992), Lippens & Wille (1976), Louette (1981), Mackworth-Praed & Grant (1970), Moreau (1966), Payne *et al.* (1997), Pérez del Val (1996), Pérez del Val *et al.* (1994), Prigogine (1980, 1984a), Robertson (1994), Stuart (1986).

### 3. Rufous-sided Broadbill

#### *Smithornis rufolateralis*

**French:** Eurylaime à flancs roux

**Spanish:** Eurilaimo Flanquirojo

**German:** Weißbinden-Breitachen

**Other common names:** Red/Red-sided Broadbill

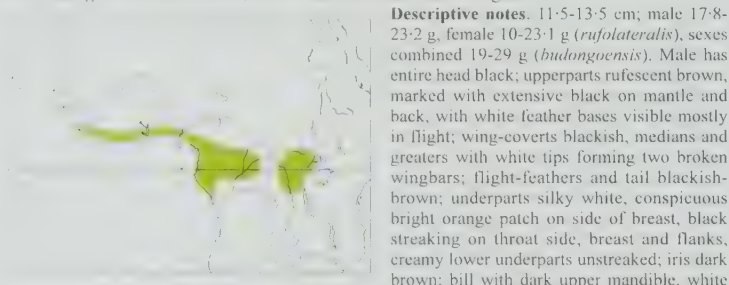
**Taxonomy.** *Smithornis rufolateralis* G. R. Gray, 1864, Ghana.

Sometimes considered to form a superspecies with *S. capensis*, but latter probably more closely related to *S. sharpei*. Races very similar, *budongoensis* possibly not tenable. Two subspecies recognized.

**Subspecies and Distribution.**

*S. r. rufolateralis* G. R. Gray, 1864 - I: Sierra Leone I: to W Zaïre, S to SW Congo and N Angola (Cabinda).

*S. r. budongoensis* van Someren, 1921 - EC & NE Zaïre and W Uganda.



to yellowish-white lower mandible; legs and feet olive-green. Differs from *S. sharpei* in smaller size, white wingbars, less intense orange restricted to side of breast, all-black head. Female has head rufous-tinged dark brown indistinctly streaked darker, upperparts rufous-brown with little or no black, browner wings, underparts washed with greyish or buffish, primarily on flanks, duller orange breast sides. Juvenile has upperparts bright rufous, crown often similar but sometimes darker than mantle and back, tips of median coverts buff but outermost spot usually white or creamy, underparts like female but darker orange on breast side. Race *budongoensis* differs from nominate only in having fewer and shorter dark stripes below, crown of female greyer. **VOIC.** Weak, plaintive, high-pitched short whistle, variously as "wee wee thew thew" or "huiiii"; these and other rhythmic calls run together to form simple song in courtship. Frog-like mechanical trill during display-flight a very loud staccato "ttt-rrrrrrrrrrrr" c. 0.7 seconds long, starts abruptly, slows and accelerates, then ends abruptly, similar to that of *S. capensis* but higher-pitched.

**Habitat.** Primary and secondary forest in lowlands, locally to 1500 m; often near water. Preference for dense growth, particularly in tangles of lianes, and also in logged forest. Unlike *S. capensis*, it occurs in old regrowth on land previously under cultivation.

**Food and Feeding.** Insects and other arthropods. Examination of stomach contents of 20 specimens revealed orthopterans (grasshoppers, crickets), coleopterans including click beetles (Elateridae), ants, an earwig (Dermaptera); also a spider and a millipede (Diplopoda). Observations indicate that small cicadas (Cicadidae) and small hairless caterpillars are favoured items: a male once observed feeding a small, green cicada to nestlings. Often catches flying insects. In Liberia, usual foraging height 3-15 m, but regularly caught in mist-nets below 2 m. Reported rarely in mixed-species foraging flocks.

**Breeding.** In Liberia, breeds in Feb-Aug in N and Aug-Feb in SE; Sept-Apr in Cameroon and Gabon, or possibly starting earlier, with peak of egg-laying in Jan; Dec-Oct in Zaïre and Jun in Uganda. Nest an untidy bag c. 15-17 cm long with hanging "tail" and with entrance hole 3.5-5.5 cm wide c. 3 cm from top, built variously of coarse dead leaves, bamboo leaves, plant and palm-frond fibres, mossy roots and dry twigs, thickly interwoven with long, fine black fungal strands (*Marasmius*), sometimes with moss around entrance, and lined with soft leaf material or fine fibres; suspended 1-2 m above the ground from horizontal branch or creeper by means of fibres. Clutch 1-2 eggs, usually 2; female incubates, and both sexes feed chicks; when female is absent, male clings to entrance hole to guard nestlings; incubation and fledging periods not documented.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Locally common, possibly with larger range than hitherto reported. Occurs in several protected areas, e.g. Gioia Forest Reserves in Sierra Leone, Yapo Reserve in Ivory Coast, and a number of national parks. No records from Togo since 1902. In Liberia, estimated densities based on vocalizations were 4 pairs/km<sup>2</sup> in S Gio National Forest, 6-10 pairs/km<sup>2</sup> in the Niabo area, and 14-25 pairs/km<sup>2</sup> and locally up to 3 pairs/10 ha in area N of Zvedru. A study in Gabon suggested a population density of 12 pairs/km<sup>2</sup>. Can be common in one area and rather rare nearby: e.g. in Cameroon, fairly common in Korup National Park but rare on nearby Mt Kupé; apparently a similar situation in E. Zaïre, where can be locally common or scarce.

## Family EURYLAIMIDAE (BROADBILLS)

### SPECIES ACCOUNTS

**Bibliography.** Allport *et al.* (1989), Bannerman (1936), Bates & Ogilvie-Grant (1911), Borrow & Demeý (2001), Bowden (2001), Brosset & Énard (1986), Chapin (1953), Cheke & Walsh (1996), Chittenden (1999), Colston & Curry-Lindahl (1986), Davidson (1978), Dean (2000), Demeý & Fishpool (1991, 1994), Dowsett & Dowsett-Lemaire (1991, 1993, 1997), Dowsett & Forbes-Watson (1993), Dowsett-Lemaire & Dowsett (1999), Elgood *et al.* (1994), Fishpool & Evans (2001), Gartshore *et al.* (1995), Gatter (1997), Germain (1992), Grimes (1987), Keith *et al.* (1992), Lippens & Wille (1976), Louette (1981), Mackworth-Praed & Grant (1957, 1970), Nash (1990), Ntiamoa-Baidu, Asamoah *et al.* (2000), Ntiamoa-Baidu, Owusu *et al.* (2000), Prigogine (1971, 1980, 1984a), Rand *et al.* (1959), Rodewald *et al.* (1994), Sayer *et al.* (1992), Serle (1950), Short *et al.* (1990), Thiollay (1985), Thomas (1991), Traylor (1960), Waltert (2000), Waltert *et al.* (1999).

## Subfamily CALYPTOMENINAE

### Genus *CALYPTOMENA* Raffles, 1822

#### 4. Green Broadbill

##### *Calyptomena viridis*

**French:** Eurylaime vert

**German:** Smaragdbreitachen

**Spanish:** Eurilaimo Verde

**Other common names:** Lesser Green Broadbill

**Taxonomy.** *Calyptomena viridis* Raffles, 1822, Bengkulu District, south-west Sumatra.

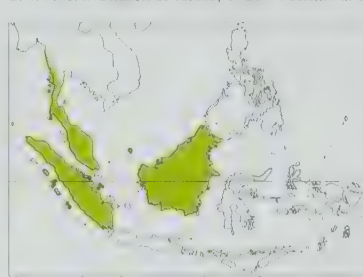
Distinctive race *siberu* may warrant species status. Birds from S Myanmar S to C Malay Peninsula described as race *continentis*, but indistinguishable from earlier-named taxon *caudacea*. Bornean population possibly separable as race *gloriosa*, but existing museum specimens too old and faded for assessment, and insufficient recent material available for examination. Three subspecies recognized.

**Subspecies and Distribution.**

*C. v. caudacea* Swainson, 1838 - S Myanmar (Tenasserim), SW Thailand and Malay Peninsula, including islands of Rah and Phuket; formerly also Singapore, and probably Pinang I.

*C. v. viridis* Raffles, 1822 - Sumatra, Nias I, Batu Is, Lingga Archipelago, N Natuna Is and Borneo.

*C. v. siberu* Chasen & Kloss, 1926 - Mentawai Is (Siberut, North Pagai, South Pagai).



**Descriptive notes.** 14-17 cm, 18.5-19 cm (*siberu*); 43-72.8 g. A plump, green bird with short bill, short tail and unusual tuft of feathers on forehead; broad, pointed wings in flight. Male is iridescent green with yellow spot anteriorly above eye, narrow paler eyering, prominent black spot behind ear-coverts, broad black bars and patches on wings, black flight-feathers edged green; forehead tuft almost covers bill; iris dark brown or blackish; bill black to greyish, paler lower mandible olive, yellowish cutting edges; legs and feet green to olive-green. Differs from *C. hoxii* in having no blue on underparts, no

black on nape, black on wings in form of bars, not spots; from *C. whiteheadi* by much smaller size, much less black in plumage. Female is paler green, without black markings, forehead tuft less pronounced, brighter lime-green eyering. Juvenile resembles female, breast very pale greenish, belly and undertail-coverts paler greenish-white, primaries browner; immature male like adult female, but with bright pale green spot just before and above eye, diffuse blackish spots on wing, sometimes some blue feathers on head. Race *caudacea* is on average marginally paler and larger than nominate; *siberu* is largest and darkest, male with plumage washed bright blue, particularly apparent below, female duller than previous, especially above, but sometimes some blue feathers on nape. **VOIC.** Variety of distinctive, sometimes quiet, calls, often with bubbling, liquid quality; most frequently heard a soft, bubbling trill, starting with quieter note, that increases in tempo and has upward inflection, "toi, toi-oi-oi-oi-oi-oi-oi"; also "ooo-turr", like sound of a stone bouncing on glass. In captivity, two variations of this or a similar call described as "goik-goik" and "goik-goik-doyik", with final syllable faster and higher, probably as alarm but perhaps also as contact calls; also, in display, series of c. 7 faster "goik" notes each accompanied by a head-bob; also, "doy-doy-ee-oh" by captive male considered territorial courtship song, with corresponding call by female very quiet and more as "go-hohohohoho" or "coo-whowhowhowho"; also, various wheezes, whines and cackling notes by male.

**Habitat.** Mostly rainforest and mixed dipterocarp forest, usually in understorey and lower levels, locally also riverine and heath forest, tidal swamp-forest and peat-swamp-forest. Found also in overgrown *Albizia* plantations, rubber estates, cocoa plantations, timber plantations adjacent to forest and secondary forest, where records suggest that these habitats used mostly when foraging; also forages at times in lightly and heavily logged forest. Mostly in lowlands and hills, to 900 m in Peninsular Malaysia; in Borneo usually below 700 m, but recorded to 1200 m; to 1700 m in Sumatra.

**Food and Feeding.** Fruit; also occasionally invertebrates, particularly insects, and these sometimes fed to young in great quantity; emerging termites (Isoptera), for example, caught in flight. Fruits of wide variety and size range taken, particularly figs (*Ficus*), those with large seeds, and lipid-rich arillate ones (e.g. *Eugenia*, *Knema*, *Horsfieldia*), also large fruits of understorey palms, and hard, oily fruits of *Canarium*; in S Borneo, fruits of the Meliaceae and the Myristicaceae a major food source. At study site in Peninsular Malaysia, a radio-tracked male spent 30-70% of total observation time over 5 days, and a female c. 50% of time over 7 days, in or near specific fruiting fig trees, demonstrating importance of figs in this area; diet included fruits of 21 species of strangling or epiphytic figs ranging in size from 5.4 × 5.9 mm to as big as 32.4 × 27.4 mm; daily foraging ranges of four birds were at least 2.5-6 ha, and 1 female covered c. 13 ha in 7 days and 1 male c. 24 ha in 6 days. All food, even largest fruits, usually swallowed whole; sizes of regurgitated seeds recorded from as small as 1 × 1 mm up to 24.2 × 16.2 mm (ripe-fruit size 27-30.5 × 18-23 mm). Most foraging is carried out in the lower levels and understorey of forest, but upper levels and forest edge also visited at times. Fruits plucked from tree when perched or snatched while flying past; also seen to pick fallen fruit from ground.

**Breeding.** Breeds in Feb-Apr in Myanmar; in Malay Peninsula apparently after heavy rains of early part of NE monsoon, Mar-Jun in Thailand and May-Aug in Malaysia; Sept in Sumatra and Jul on Nias I; in Borneo during driest part of year, Jan-Jun. Nest constructed by female, taking c. 5



days, a neat, laterally compressed, compact gourd-shaped structure of plant fibres such as strips of palm and bamboo leaves, rootlets and dead leaves, sometimes with green moss added, and lined with fine, dried leaves, grass-like fibres or hair-like black roots; typical dimensions c. 23 × 10 cm, with "tail" up to c. 65 cm but usually shorter, with elongated side entrance 7.5-8.9 cm tall and 5.6-4 cm across, relatively small nest-chamber 14-16.5 cm high and 7.5-8.9 cm wide; suspended cross-wise about half-way along small branch or twig of sapling or small tree, usually 1-2 m above ground, once from twig hanging over water. Clutch 1-3 eggs, usually 2, the first laid 3 days after copulation, the next 3 days later; in study in Borneo replacement clutch laid after predation, and a captive pair, when eggs removed, laid 2 more at 2-day interval 3 weeks later; in captivity, only female incubates, period 17-18 days, the young fledging when 22-23 days old. From 6 nests in Borneo, fledging success 0-5 young per pair.

**Movements.** Essentially resident, but some nomadism associated with seasonality of fruiting trees. Evidence supports theory that numbers at specific localities vary according to availability of food; 4 trapped at 1300 m at Fraser's Hill, in Peninsular Malaysia, had probably moved because of scarcity of food resources in their normal lower-lying range.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Fairly common or locally common where suitable primary forest remains. Occurs in a number of protected areas, such as Khao Nor Chuchi Wildlife Sanctuary, in Thailand, Panti Forest Reserve and Taman Negara National Park, in Peninsular Malaysia, Way Kambas National Park, in Sumatra, and Gunung Mulu National Park, in Borneo. Last reported from Singapore in 1941, and from nearby Ubin I in 1927; old records from Pinang I are not considered acceptable, but the species probably occurred there in the past. On W Sumatran islands the only recent records are from Siberut, where it is common in suitable habitat. In Borneo, a population density of 60 birds/km<sup>2</sup> recorded for a forest site in Sarawak; over two survey periods at Similajau National Park, Sarawak, this was the only eurylaimid found at all sites in both surveys. As an understory frugivore, however, this species suffers dramatic decline in response to logging; surveys in selectively logged forest revealed densities of only c. 10-25% of the normal level 9 years after operations ceased, and numbers were still low 22 years after logging. Numerical declines of this nature could seriously affect the regeneration of understory plants with large seeds, such as palms, since no other fruit-eating bird with a broad gape regularly feeds in the understory.

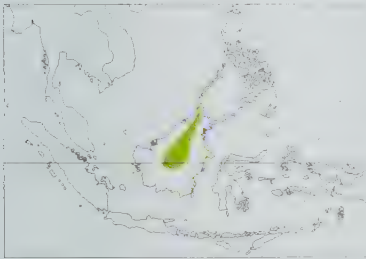
**Bibliography.** Bô Khoa Hoc *et al.* (1992), Chasen (1935), Chasen & Hoogerwerf (1941), Collar *et al.* (2001), Danielsen & Heegaard (1995), Deignan (1947), Dekker & Dickinson (2000a), Dekker *et al.* (2000), Delacour (1970), Delacour & Jabouille (1990), Duckworth & Kelsh (1988), Duckworth *et al.* (1997), Fogden (1970, 1972, 1976), Gore (1968), Gossett & Beske (1997), Gyldenstolpe (1916), Holmes (1994, 1996), Holmes & Philipps (1998), Holyoak (1970), Hopwood (1919), Jeyarajasingam & Pearson (1999), Kemp (2001), Lambert (1989a, 1989b, 1992a, 1992b), Leighton (1982), Lekagul & Round (1991), Lewis (1996), MacKinnon & Philipps (1993), Madoc (1976), Mann (1987), van Marle & Voous (1988), McClure (1998), Medway & Wells (1976), Meyer de Schauensee (1946b), Mitra & Sheldon (1993), Nash & Nash (1988), Nee & Guan (1993), Pearson (1975a), Robinson (1927), Robson (2000d), Round (1988), Sheldon *et al.* (2001), Smith (1943), Smythies (1986, 1999), Stattersfield & Capper (2000), Stuart Baker (1934), Thompson (1966), Verheugt *et al.* (1993), Vowles & Vowles (1997), Webster (1992), Wells (1970, 1985b, 1988), Wells & Medway (1976), Wells *et al.* (1979), Wilkinson *et al.* (1991), Wong (1986).

5. Hose's Broadbill

*Calyptomena hosii*

**French:** Eurylaime de Hose **German:** Fleckenflügel-Breittrachen **Spanish:** Eurilaimo de Hose  
**Other common names:** (Hose's) Magnificent (Green) Broadbill, Blue-bellied Broadbill

**Taxonomy.** *Calyptomena Hosii* Sharpe, 1892, Mount Dulit, 3000 ft [c. 900 m], Borneo. Monotypic.  
**Distribution.** N & C Borneo, patchily from Mt Kinabalu S to the Muller Range and Kayan Mentarang.



**Descriptive notes.** 19-21 cm; male 102-115 g, female 92 g. Male is bright iridescent green above, with forehead tuft hiding most of bill; thin pale green eyering, black spot before eye, black patch behind ear-coverts, black patch on nape and another across top of mantle, prominent black rounded spots on wing-coverts; flight-feathers black, edged green; below, indigo-blue on breast and deep blue on belly and undertail-coverts; iris blackish; bill horn-coloured to blackish; legs and feet dark olive. Distinguished from other *Calyptomena* by blue on underparts, from *C. viridis* also by spots rather than bars on wing. Female has smaller forehead tuft, paler upperparts slightly olive-tinged, black on head restricted to small spot in front of the eye, prominent lime-green eyering, paler lime-green underparts with sky-blue on belly and undertail-coverts. Juvenile is like female, but male has dark feathers on lower nape; immature male like adult, but most of black head markings lacking, blue below less extensive. **VOICE.** Only call recorded, uttered during bobbing head movements, is a pleasing, soft, cooing like that of a dove (Columbidae).

**Habitat.** Upper zone of mixed dipterocarp forest on hill slopes, and lower montane forest; also forest dominated by limestone pinnacles, and lowland forest on mountain slopes. To c. 1220 m, usually above 600 m, occasionally as high as c. 1680 m.

**Food and Feeding.** Mostly fruit, including figs (*Ficus*), also unidentified soft greyish-yellow berries; once observed eating small orange figs c. 1 × 1 cm in size and covered in short, spiny hairs. Also recorded eating leaf buds, and some insects. Forages usually at lower levels, and singly, in pairs, or in small groups; parties of 6-8 gather at fruiting fig trees.

**Breeding.** Few records, covering Apr-Oct. Nest a delicate hanging structure; one found recently measured c. 25 × 15 cm, was made of dead leaves of broadleaf plants, rattans and bamboos, and covered in green moss and lichens, with a hanging "tail" of rattan leaves, and suspended from tip of a low drooping branch c. 1.5 m high of an understory tree. Two clutches were of 2 and 4 eggs; incubation and fledging periods not known.

**Movements.** Resident; probably makes some local movements, depending on seasonality of fruiting trees.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Bornean Mountains EBA. Locally common, but rare at some sites (e.g. Mt Kinabalu). Occurs in Gunung Mulu National Park. Areas where it is common are undisturbed forest. In Sarawak, becomes rare in forest after logging activities. Although absent from some apparently suitable habitats, it may yet prove to be more widespread than records indicate, particularly in C Borneo. Lowland forest in the region has been severely reduced, and is expected

to have been destroyed completely within less than a decade. The species' preference for submontane habitats could assist its survival, at least in the short term.

**Bibliography.** Andrew (1992), Banks (1935), Büttikofer (1901), Collar *et al.* (2001), Dekker *et al.* (2000), Fogden (1965, 1976), Holmes (1997), Hose (1898), MacKinnon & Philipps (1993), Robson (1993b), Sharpe (1892, 1894), Sheldon *et al.* (2001), Smythies (1999), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Sujatnika *et al.* (1995), Wells (1985b), Wells *et al.* (1979).

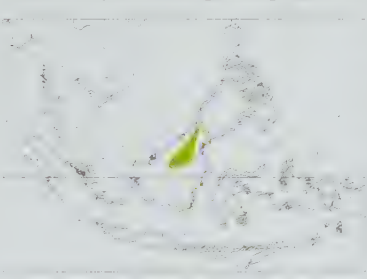
6. Whitehead's Broadbill

*Calyptomena whiteheadi*

**French:** Eurylaime de Whitehead **Spanish:** Eurilaimo de Whitehead  
**German:** Schwarzkehl-Breittrachen  
**Other common names:** Black-throated (Green) Broadbill

**Taxonomy.** *Calyptomena whiteheadi* Sharpe, 1888, Mount Kinabalu, 3000 ft [c. 900 m], Borneo. Monotypic.

**Distribution.** N & C Borneo, probably along entire spinal range from Mt Kinabalu S at least to Mt Latuk and Kayan Mentarang, although known to be absent from several mountain areas.



**Descriptive notes.** 24-27 cm; male 142-171 g, female 150-163 g. The largest green broadbill, with obvious black markings. Male has vivid green plumage, with forehead tuft almost hiding bill; some black on crown, prominent black spot behind ear-coverts and another on nape, extensive black on wings and mantle; flight-feathers and tail blackish, secondaries edged green; large, bold black patch on lower throat and centre of upper breast, green below with prominent black streaking; iris dark brown; bill black, paler lower mandible; legs and feet olive to green-grey. Distinguished from other *Calyptomena* by much larger size, black throat

patch, more extensive black markings on wings and body. Female slightly smaller than male, feather tuft less pronounced, lacks black head spots, underparts duller green with no black markings other than throat patch. Immature similar to adult, but fewer black markings. **VOICE.** Snoring, grinding or wheezing disyllabic calls characteristic, e.g. "toc-trrrr" with second syllable a grinding noise, coarse, harsh, rather abrupt "kerrrrr" or "kh-khrrrrr" repeated by group of 3-4 perched males, also as "chek, rrrrr-trrrr" and "teek-waaaaarrt"; also staccato "eek-eek-eek" reminiscent of woodpecker (Picidae) and hissing "ee-ooo", possibly as alarm calls; also short, very harsh, woodpecker-like "tzip" directly followed by coarse rattle 2-3 seconds long, and in flight an interposed rapid phrase of harsh notes very like those of a woodpecker; also hollow, deep search call like that of a trogon (Trogonidae), "go-up", imitation of which attracts bird. Other calls include shrill "saat", loud harsh call like that of jay (Corvidae), snore-like wheeze, and other hissing and grinding noises.

**Habitat.** Montane forest, also forest edge; preference for tall growth, and not found in areas of stunted forest. At 900-1700 m, but can occur as low as 600 m and as high as c. 1980 m.

**Food and Feeding.** Mostly fruits, some insects. Fruits vary in size from small berries up to drupes larger than plums, and recorded as taking the strong-smelling fruits of *Litsea cubica* (Lauraceae); fruits up to 15 × 20 mm in size found in stomachs. Most items swallowed whole, and even large seeds are regurgitated whole. Insects recorded in one stomach, and observed taking moths at dawn from around lights in Mount Kinabalu National Park. Forages usually singly, but occasionally in small, noisy groups at fruiting trees; sometimes perches on tree trunks when feeding. Occasionally joins mixed-species foraging flocks.

**Breeding.** Few records; breeding season probably at least Mar-Jun. One nest described, suspended from slender branch c. 15 m above ground, exterior built of fresh green moss, solid interior lined with dry bamboo leaves and forming well-sheltered pocket, and with long "tail" of moss and lichen giving camouflage effect against the numerous streamers of moss and lichen hanging from adjacent branches. Clutch 1-2 eggs, based on three nests; no information on incubation and fledging, or on roles of sexes.

**Movements.** Normally resident. During severe drought conditions of 1997/98, one bird seen in forest at elevation of c. 75 m at Maau, on R Bengalun (E Kalimantan), far from mountains. Otherwise, probably some local movement dependent on seasonality of fruiting trees.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Bornean Mountains EBA. Relatively common in suitable habitat, which remains extensive at its preferred altitudinal range. Occurs in Gunung Mulu and Mount Kinabalu National Parks. Poorly known; research required, especially on its breeding behaviour and biology.

**Bibliography.** Andrew (1993), van Balen (1997), Banks (1937, 1952), Davison (1992), Dekker *et al.* (2000), Fogden (1970), Gibson-Hill (1952), Holmes (1997), Hose (1898), MacKinnon & Philipps (1993), Pfeffer (1960), Robson (1993b), Sheldon *et al.* (2001), Smythies (1999), Stattersfield *et al.* (1998), Sujatnika *et al.* (1995), Wells (1985b).

Subfamily EURYLAIMINAE

Genus CYMBIRHYNCHUS

Vigors, 1830

7. Black-and-red Broadbill

*Cymbirhynchus macrorhynchos*

**French:** Eurylaime rouge et noir **Spanish:** Eurilaimo Rojinegro  
**German:** Kellenschabel-Breittrachen  
**Other common names:** Common Rouge-et-noir Bird; Allied Broadbill, Arakan Black-and-red Broadbill (*affinis*)

**Taxonomy.** [*Todus*] *macrorhynchos* J. F. Gmelin, 1788, no locality = Borneo.



Considerable individual variation throughout most of range renders defining of geographical races difficult; apparent general clinal trend in certain characters, such as increase in size and decrease in amount of white in tail from N to S, but no constant differences between populations; variation in characters used to define races requires further study. Described races *lemniscatus* (Sumatra, Bangka I and Belitung I) and *tenebrosus* (SE Sumatra) considered synonymous with nominate; *siamensis* possibly inseparable from *malaccensis*. Four subspecies recognized.

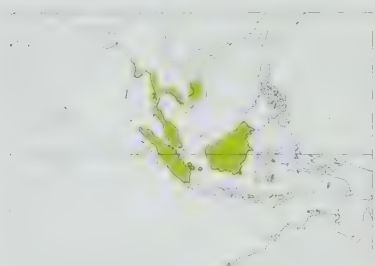
#### Subspecies and Distribution.

*C. m. affinis* Blyth, 1846 - SW Myanmar.

*C. m. siamensis* Meyer de Schauensee & Ripley, 1940 - S Myanmar (Tenasserim), SW & S Thailand (except extreme S), Cambodia, S Laos and S Vietnam.

*C. m. malaccensis* Salvadori, 1874 - extreme S Thailand and Peninsular Malaysia; formerly also Singapore.

*C. m. macrorhynchus* (J. F. Gmelin, 1788) - Sumatra, Bangka I, Belitung I, and Borneo (including Pulau Laut, off S coast).



**Descriptive notes.** 20-24 cm, 50-76 g. Distinctive broadbill with carmine-maroon underparts and brightly coloured bill. Both sexes have broad maroon throatband extending to ear-coverts, green-glossed black crown and upperparts, maroon rump and uppertail-coverts; scapulars elongated and pointed, white on outer webs; wing-coverts black, edges glossed blue-green, orange on marginal coverts; flight-feathers blackish, concealed white bar at bases; tail blackish, outer 1-2 feather pairs sometimes with very small whitish patch near tip of inner webs; broad black breastband, remaining underparts dark maroon, sometimes with patches

of orange on belly and flanks; iris green to blue; upper mandible bright blue, lower mandible yellow; legs and feet blue. Juvenile is browner, with white spots on wing-coverts, patches of maroon below. Races differ mainly in size, and in amount of white in tail and wings: *affinis* is smallest, has crimson spots on innermost secondaries, more conspicuous white wing spot, more white on tail, narrow black feather edges on rump; *malaccensis* has maroon colours slightly paler, more orange-yellow spotting below; *siamensis* is generally slightly smaller than previous, with reduced orange spotting below, usually more white on tail, sometimes thin black edges on rump feathers, but variable. **VOICE.** Often silent, with calls quieter than those of most eurylaimids. Most frequently heard call in Laos an accelerating series of "parnk" notes, likened to sound of wingbeat of Wreathed Hornbill (*Rhyticeros undulatus*); other calls include grating notes as if from a cicada (Cicadidae), churring calls, melodious whistles, monotonous repeated "tyook", rasping "wiark", also ascending trill like that of *Eurylaimus ochromalus* but shorter, much slower, softer; alarm a rapid series of "pip"; in Sarawak, hoarse, grumbling "ka-ka-kraaar-kraaar" falling in pitch; in Brunei, hoarse twanging "cow", and a snarl likened to that of cornered puma (*Felis concolor*).

**Habitat.** Prefers lowland forest near rivers and streams, including evergreen and semi-evergreen forest, mixed dipterocarp forest, riverine forest, swamp-forest of various kinds, mangroves; also plantations near water, including rubber estates, also locally in villages and gardens. Occurs also in secondary forest in logged areas where some scattered tall trees remain, and in lower secondary vegetation with clumps of open forest in pastureland. Persists in disturbed habitats, even seriously degraded areas along rivers. To 300 m in most of range; locally to 900 m in Sumatra and Borneo.

**Food and Feeding.** Small invertebrates, mostly insects, form bulk of diet; some small fruits and other vegetable matter also taken. Recorded items are orthopterans, beetles, ants, hemipteran bugs, moths, caterpillars, molluscs, freshwater snails, and freshwater crustaceans including small crabs; once a small fish. Most information based on stomach contents. Fruit found in stomachs included not only pulp, but also seeds and berry stones, and once a leaf; for at least some individuals, fruit probably no more than a local or seasonal component of diet. Observations of feeding scant, but notably include the catching of moths fluttering over small streams.

**Breeding.** Scattered records over most of range suggest breeding in drier months of year: Feb-Jun in Myanmar, May-Jun in Thailand, May and Jan in Laos, Jul-Aug in Cambodia, Feb-Aug in Peninsular Malaysia, Mar-Jun in Sumatra, and Dec-Aug in Borneo. Nest built by both sexes, work sometimes taking up to 49 days, a conspicuous ragged pear-shaped structure with dangling "tail", built of tightly interwoven grass, vines, sticks, bark strips, leaves, creepers, vegetable fibres, rootlets, fungal hyphae and pieces of moss, interior lined with e.g. reed-grass or palm fronds and floor covered with green leaves and other softer material, side entrance hole with "roof" of grass or fibres; size variable, 30-65 cm deep and 12-25 cm broad, nest-chamber 10-15 cm deep and 7-8 cm across, diameter of entrance hole 4-5 cm; suspended from end of a branch or vine 1-5-8 m over water (river, stream or lake, occasionally pool, tidal mangrove or drainage ditch), more rarely over path or road, or more vulnerable site (e.g. telephone wire, or pole emerging from water), once in isolated bush in open rice paddy, and once near wasp nest. Clutch 2-3 eggs, occasionally 4, laid at rate of 1 per day; incubation apparently by both sexes; incubation and fledging periods unrecorded. Success variable, nests on overhead wires destroyed by strong winds, those low down or attached to poles vulnerable to flooding; in Peninsular Malaysia, at least 6 of 17 nests destroyed before breeding completed.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Occurs in several protected areas, including Nam Bai Cat Tien National Park, in Vietnam, Taman Negara National Park and Pantli Forest Reserve, in Peninsular Malaysia, and Gunung Leuser and Way Kambas National Parks, in Sumatra. Formerly very common to abundant, but has decreased considerably. Now generally rare in N of range following lowland deforestation; fairly common in peninsular Thailand, where able to survive in logged areas if tall trees and moist secondary growth remain along riverbanks; scarce in most of Indochina but can be locally common, even in degraded forest, e.g. in S Laos. In late 19th century was apparently common in Mergui Archipelago, in S Myanmar, but current status in those islands unknown. In Peninsular Malaysia, relatively common where suitable habitat remains; presumably occurred formerly on Pinang I, but no confirmed records. Extinct in Singapore since first half of 20th century. Rather scarce although widely distributed in Sumatra; in Borneo, common in lowlands but very rare in interior and at higher altitudes. As with many forest species, it is vulnerable to disturbance; nevertheless, is able to survive if some suitable habitat mosaics near water remain.

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ssp  
*dalhousiae*

ssp  
*psittacinus*

ssp  
*polionotus*

ssp  
*rothschildi*

ssp  
*rubropygius*

ssp  
*lunatus*

ssp  
*brookei*

ssp  
*javanicus*

ssp  
*harterti*

ssp  
*sumatranus*

ssp  
*brunnescens*

ssp  
*laoensis*

PLATE 2

inches 3  
cm 8

15



Genus *PSARISOMUS* Swainson, 1837

## 8. Long-tailed Broadbill

*Psarisomus dalhousiae*

**French:** Eurylaime psittacin **German:** Papageibreitrachen **Spanish:** Eurilaimo Lorito  
**Other common names:** Yellow-throated Broadbill

**Taxonomy.** [*Eurylaimus*] *Dalhousiae* Jameson, 1835, Himalayas, at 10,000 feet [c. 3000 m], northern India; this altitude is above normal range and type probably from near Simla. Variation within accepted races unclear and somewhat complex. In particular, birds from N Indochina (possibly also S China) with more white in collar are sometimes separated subspecifically as “*assimilis*”, while race *divinus* may be closer to latter or is possibly indistinguishable from some *cyanicauda*. Peninsular Malaysian birds, although included in *psittacinus*, are less distinctively patterned than Sumatran population and may be closer to nominate, or possibly represent an undescribed race. Further taxonomic study required. Five subspecies recognized.

**Subspecies and Distribution.**

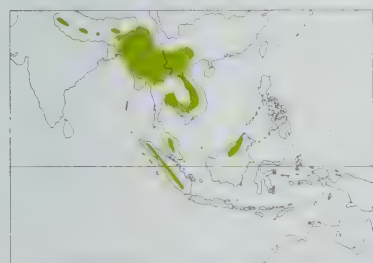
*P. d. dalhousiae* (Jameson, 1835) - Himalayan foothills E from N India and Nepal, possibly SE Bangladesh, and from N Myanmar and S China (W & S Yunnan, SW Guizhou, SW Guangxi) S to N Thailand, Laos and C Vietnam (C Annam); also reported from SE Tibet.

*P. d. cyanicauda* Riley, 1935 - SE Thailand and Cambodia.

*P. d. divinus* Deignan, 1947 - S Vietnam (S Annam).

*P. d. psittacinus* (S. Müller, 1836) - Peninsular Malaysia and Sumatra.

*P. d. borneensis* Hartert, 1904 - N Borneo.



**Descriptive notes.** 23–26 cm, 64–67 g, 52–8 g (*borneensis*). Distinctive slim, very long-tailed, colourful broadbill. Adult of both sexes has black cap with blue crown patch, yellow spot on nape side, bright yellow face, throat and almost complete collar, usually small blue nuchal patch; generally little or no white in collar (but in N Indochina often whitish or pale yellow feathers at bottom edge, especially near nape); upperparts green; flight-feathers black, basal two-thirds bright blue; long, graduated tail blue, undertail black; paler green below, often tinged blue, in NW (Nepal E to N Myanmar) underparts sometimes mostly turquoise; blue underwing with prominent white patch on flight-feathers; iris green to grey-brown, sometimes partly pink; bill greenish, with bluish base; legs and feet light green to greenish-yellow. Juvenile has green crown, pale yellow on lores and behind ear-coverts, greenish-yellow chin and throat. Races vary in size, including tail length, and in colour of, especially, the collar and tail: *cyanicauda* has darker tail than nominate, outer webs strongly washed green; *divinus* resembles previous, but green of upperparts brighter and deeper in tone, tail not quite so dark and green wash on tail side reduced, nuchal patch more extensive and more clearly defined, female nuchal patch more blue-edged yellow; *psittacinus* is shorter-winged and longer-tailed than other races on mainland, in Sumatra collar admixed white and yellow, white usually predominant and often extending narrowly across upper breast, female usually differing in having partly or fully concealed yellow band across nape, but in Peninsular Malaysia pattern less distinctive, with greater resemblance to nominate race; *borneensis* is like *psittacinus* but smaller, tail slightly paler, more ultramarine-blue than other races. Voice. Series of loud, sharp, downward-inflected whistles, “tseeay” or “pseew”, repeated 5–8 times at increasing speed, usually in flight or on take-off; at other times, occasional single, sharp “tseeay” or “pseew”, and short, rasping “psweep”.

**Habitat.** Large variety of forest habitats occupied over its wide range, including primary and secondary tropical evergreen, semi-evergreen and subtropical broadleaf forest, mixed deciduous forest including areas adjoining pine (*Pinus*) forest, and bamboo-dominated areas; in Indian Subcontinent, some preference for forested ravines with little undergrowth, and with running water or temporary pools. Sometimes visits more open areas, including gardens, in cold weather. In India usually c. 600–1200 m, occasionally to c. 2000 m, but at 200–1830 m in NE; 275–1340 m in Nepal, and to c. 1800 m in Bhutan and Myanmar; 700–1500 m in China; c. 650–2200 m in Thailand but lower, to 1525 m, in Indochina; 150–1550 m, mostly above 800 m, in Peninsular Malaysia; 700–2500 m in Sumatra and 900–1700 m in Borneo.

**Food and Feeding.** Almost exclusively invertebrates, mostly insects; claims of fruit and berries eaten are unsupported. Recorded items cover orthopterans, cicadas (Cicadidae), beetles, cockroaches (Blattodea), hemipteran bugs, butterflies, large ants, caterpillars and other insect larvae and pupae; also spiders. Single record of 2 small green tree-frogs being consumed. Forages from canopy down to undergrowth. Insects and other prey gleaned from foliage, along branches and trunks, occasionally by climbing trailing creepers and hanging branches; aerial prey also captured in fluttering sallies from different perches. In non-breeding period occurs in small, noisy foraging parties of c. 15 birds, rarely more, but occasionally up to 40 together; groups or pairs will also briefly join mixed-species flocks.

**Breeding.** Relatively few documented records. Season Mar–Aug in Indian Subcontinent; from Apr in Myanmar, but fresh eggs found in Aug (probably rare second brood, if first lost); Feb–Sept in Thailand and Mar–Jul in Indochina; Feb–May in Peninsular Malaysia, Feb–Aug in Sumatra and from Mar in Borneo. Conspicuous bulky pear-shaped nest with long “tail”, built by both sexes, sometimes with helpers, usually within c. 3 weeks, material including creeper stems and tendrils, fine roots, dead leaves, palm fibre, fern fronds and stems, twigs, liverworts and mosses, sometimes adorned with green moss and spider egg cases, side entrance usually with small “roof”, interior chamber lined with grass blades or roots and bamboo leaves overlaid with green leaves, latter sometimes replaced during incubation; nests measured in India varied from 23 × 12.7 cm to 35.6 × 20.3 cm, chamber 10–12.5 cm wide with entrance hole c. 4–5 cm across, total length with “tail” up to c. 1.4 m, usually shorter; usually suspended from tip of branch or creeper, once from telegraph wire, up to c. 30 m above ground, usually lower, and often above stream, path or open area; same site may be used in successive seasons, up to 6 old nests found in single tree. Clutch 4–8 eggs, usually 5–6 in India, 3 in Peninsular Malaysia; both adults participate in incubation and in feeding

of young, sometimes with helpers, e.g. 5 attending nest in Borneo; incubation period unrecorded, suggested as more than 14 days; fledging period not known.

**Movements.** Resident in most of range; in Himalayan foothills, some altitudinal migration during cold weather.

**Status and Conservation.** Not globally threatened. Occurs in many national parks and other protected areas throughout its range. Formerly common over most of its range, but now disappearing or becoming uncommon to scarce over large areas. Still locally common in some localities where suitable habitat remains, e.g. in Nagaland, NE India. Apparently decreasing significantly in NE parts of range; scarce and local in Nepal, and possibly extinct in Bangladesh, although it could survive in Chittagong Hill Tracts; in Myanmar, recent records from only few sites in W, and uncommon in extreme N during two surveys in 1998 and 1999. Locally common or uncommon in Thailand, where some young birds end up in the domestic cagebird markets; becoming rare and isolated in much of Indochina; considered uncommon in China. Locally common in Peninsular Malaysia, although increasingly scarce and local in Borneo and also apparently in Sumatra; recently recorded (vocalizations taped) in Kayan Mentarang National Park, East Kalimantan, the first record from Indonesian portion of Borneo.

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Genus *SERILOPHUS* Swainson, 1837

## 9. Silver-breasted Broadbill

*Serilophus lunatus*

**French:** Eurylaime de Gould **German:** Schwarzbrauen-Breittrachen **Spanish:** Eurilaimo Pechoplata

**Other common names:** Collared/Gould’s Broadbill; Hodgson’s Broadbill, Red-backed Broadbill, Nepal Collared Broadbill (*rubropygius*); Pegu Collared Broadbill (*lunatus*)

**Taxonomy.** *Eurylaimus lunatus* Gould, 1834, hills of Pegu District, Myanmar.

Race *rubropygius* was formerly considered a separate species, as thought to be sympatric with nominate in two areas, but recent examination of critical specimens indicates that ranges do not overlap, although closely approaching each other in NE Myanmar; one old record from Chin Hills, in NW Myanmar, attributed to nominate, remains unresolved. Status of some isolated populations, particularly in SE Thailand and Indochina, and the boundaries between and validity of several races, are poorly understood and require further study; *atrestus* and *aphobus* often synonymized with *elisabethae*, while birds occurring in lowland S Laos are considered probably to belong to *atrestus*, rather than to *impavidus*, which is better treated as confined to Bolaven Plateau. Described races *intrepidus* (NE Thailand) and *moderatus* (N Sumatra) considered unacceptable. Ten subspecies recognized.

**Subspecies and Distribution.**

*S. l. rubropygius* (Hodgson, 1839) - NE India, Bhutan and E Bangladesh E to W & NE Myanmar (Arakan, Chin Hills and Upper Chindwin E to R Irrawaddy).

*S. l. atrestus* Deignan, 1948 - C & E Myanmar (S of Bhamo, E of R Irrawaddy) and S China (SW Yunnan) S to NE Thailand, C & S (lowland) Laos and NW Vietnam (W Tonkin).

*S. l. elisabethae* La Touche, 1921 - SE China (SE Yunnan, SW Guangxi) and E Tonkin.

*S. l. polionotus* Rothschild, 1903 - Hainan I.

*S. l. lunatus* (Gould, 1834) - SC & S Myanmar (Pegu Yomas, Karen Hills, N Tenasserim) and NW Thailand.

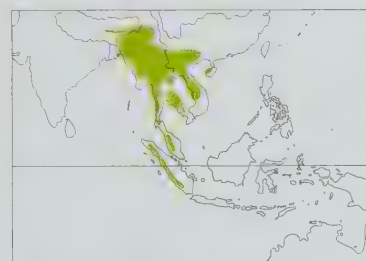
*S. l. stolidus* Robinson & Kloss, 1919 - S Myanmar (S Tenasserim) and SW & S Thailand (except extreme S).

*S. l. aphobus* Deignan, 1948 - SE Thailand and Cambodia.

*S. l. impavidus* Deignan, 1948 - Bolaven Plateau, in S Laos.

*S. l. rothschildi* Hartert & Butler, 1898 - extreme S Thailand and Peninsular Malaysia.

*S. l. intensus* Robinson & Kloss, 1916 - Sumatra.



**Descriptive notes.** 16–17 cm; 33–35 g (*rubropygius*), 25–234 g (*intensus*). Male has pale rusty head, lores usually darker rusty, forehead often ash-grey, and broad black supercilium; upperparts ferruginous, greyer on mantle, bright rufous rump and uppertail-coverts; wing-coverts blackish; flight-feathers strikingly blue and black, white band across base (conspicuous in flight), tertials orange-rufous; tail black, outer feathers tipped white; light ash-grey below, becoming white on belly and undertail-coverts; iris green to dark blue, yellowish orbital ring; bill blue to greenish-blue, orange base; legs and feet yellowish to olive.

Female is like male, but with narrow silver band across upper breast. Juvenile resembles adult, but wings and tail much shorter, plumage somewhat darker. Races differ mainly in head coloration, wing pattern, tone of upperparts and underparts: *rubropygius* differs from nominate in having dark grey lores, pale grey crown to upper mantle, darker brownish-grey rest of upperparts, silver



breastband of female broken in centre, from all other races in narrower, broad dark blue tips of outer webs of flight-feathers, darker blue secondary-bar, white subterminal spots on outer webs of secondaries, less developed supercilium, greyer underparts; *elisabethae* has lores blackish, side of head and ear-coverts pale rusty, rump and uppertail-coverts deeper rufous, less bright; *atrestus* resembles previous, but lores tinged rusty, side of head and upperparts distinctly lighter and brighter; *impavidus* is similar, but with ashy hue on upper back and scapulars, and reddish colour on crown, upperparts and tertials on average paler; *aphobus* resembles last, but lores blackish-rusty, side of head more vivid ferruginous; *polionotus* has lores black, head pale ashy with darker olive-brown tinge, upper back and scapulars ashy, darker grey breast contrasting with paler ashy throat; *stolidus* has extensive very pale ash-grey on forehead, darker, more chestnut, lower back and rump; *rothschildi* has lores pale ashy, side of head greyish without ferruginous or brownish tinge, bluish upper edge of black supercilium, more extensive bluish on bend of wing, rufous on upperparts extending from lower mantle to tail-coverts, female tends to have broader white breastband; *intensus* resembles last, but lores blackish-ash. **VOICE.** Generally silent, calls mostly in vicinity of nest. Melancholy "ki-uu" or "pee-uu", likened to sound of rusty hinge, commonly heard; thin, high-pitched, grating insect-like trill of 5-7 notes, "kitikitikit", given in flight, possibly as alarm; distinctive contact call, "pri-iiip", heard in S Laos; loud mouse-like squeaking given by mist-netted bird when disturbed.

**Habitat.** Tropical and subtropical evergreen and semi-evergreen forest, also mixed deciduous forest, including areas dominated by pine (*Pinus*), oak (*Quercus*) and bamboo; in some areas considered to occur in all forest types, including selectively logged forest; also enters agricultural lands and gardens. To c. 1700 m in India, but at c. 250 m in Bhutan; usually c. 300-900 m, occasionally to 1220 m, in Myanmar, and 300-700 m in China; usually 800-1800 m, sometimes to 2230 m, in Thailand; lower in Indochina, to 800 m in Cambodia, 700 m in Laos, and 365 m in Vietnam; 600-1220 m, rarely down to 150 m, in Peninsular Malaysia; 800-2000 m in Sumatra.

**Food and Feeding.** Invertebrates, primarily insects; records from India and Myanmar include grasshoppers, mantises (Mantidae), smaller unidentified insects, larvae, caterpillars, also small land snails. Recent report of a 10-cm lizard eaten by this species was an error, the record being referable to *Eurylaimus javanicus*. Insects taken by flycatching from perch, moving from one perch to another, although flight heavy and awkward; more often by gleaning branches and foliage, from undergrowth to below the canopy; also observed extracting larvae from tree bark, and once flying to a road puddle either to drink or to take an insect. Forages in pairs or in loose groups of up to 20 individuals, usually fewer. Will also join mixed-species flocks foraging in understorey; in N Vietnam, a group of 12 of these broadbills was considered to form the core of a mixed flock.

**Breeding.** At higher latitudes breeds in spring with arrival of rains, but farther S in drier season, pattern coinciding with movements of the SW monsoon: May-Jun in India; Mar-Jul in Myanmar but probably over longer season in S; in Thailand, Aug-Dec in N and Mar-May in S; Mar-Jun in Vietnam; Apr-Jun in Peninsular Malaysia; Mar in Sumatra. Nest a pendant ball with long, loose hanging "tail", usually neater-looking than those of most other broadbills, built by both sexes, sometimes with helpers, estimated construction time 5-10 days, material including coarse grass, outer bark of elephant grass, weeds, thin twigs, fine roots and fungal hyphae, frayed palm pieces and green moss, interior lining of broad grass blades, green leaves and other material, green leaves regularly replaced during incubation; tail may be decorated with moss, lichen, spider egg cases and other material after eggs laid; size varies, can be as large as 76 cm tall and 30.5 cm wide, but generally c. 25-38 × 10-20.5 cm, including "tail", and circular entrance hole c. 4 × 2.7 cm with "hood" projecting c. 2 cm outwards; suspended across entire width by mass of interwoven plant fibres from outer branch of small tree, tip of palm frond or bamboo, or bush or tree-fern, at height of 1-7 m, mostly 3-5 m, over open space such as road, path or small stream; if nest destroyed, replacement usually built nearby; active nests within 70 m of each other recorded. Clutch 2-7 eggs, usually 4-5, but 2 or 3 in Peninsular Malaysia; both sexes, sometimes with helpers, incubate eggs and feed chicks; incubation and fledging periods unrecorded. Eggs of cuckoos (Cuculidae) found in nests in S Myanmar and Sumatra.

**Movements.** Resident in most of range; in Himalayan foothills apparently an altitudinal migrant, moving to lower areas during cold winter months.

**Status and Conservation.** Not globally threatened. Formerly considered very common over most of its range; now disappearing or becoming uncommon to scarce over large areas, although still locally common where suitable habitat remains. Occurs in several protected areas throughout range: e.g. Namdapha National Park, in India, and scarce in Lawachara/West Bhanugach Reserve Forest, in Bangladesh; also in Xishuangbanna Nature Protection Zone, in China; at least three protected areas in Thailand, Nam Nao, Khao Yai and Kaeng Krachan National Parks; and present in Cuc Phuong National Park, in Vietnam. Recorded in Nepal in 19th century, now extinct; rare and local in Bhutan, where recorded in a few localities in S; probably much reduced in other parts of region from NE India to Myanmar. In two recent surveys in extreme N Myanmar, found to be uncommon in 1998 (900-1200 m) but none recorded in 1999. Uncommon in N Thailand, but fairly common in other areas of that country, where it is still supplied to the domestic cagebird markets; numbers much reduced in Indochina, although still being found in new localities; very rare in China. Uncommon to locally common in Malay Peninsula and Sumatra.

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## Genus *EURYLAIMUS* Horsfield, 1821

### 10. Banded Broadbill

#### *Eurylaimus javanicus*

**French:** Eurylaimé de Horsfield

**Spanish:** Eurilaimo Bandeado

**German:** Purpurkopf-Breittrachen

**Other common names:** Horsfield's/Purple-headed Broadbill

**Taxonomy.** *Eurylaimus javanicus* Horsfield, 1821, Java.

Distinctive morphological differences of nominate race, with pure yellow vent and without breastband, could suggest that it should be treated as a separate species from other races. Birds from Belitung I named as race *billitonis*, but identical to some *harterti*; in addition, both *friedmanni* and *pallidus* are frequently also lumped with that race, but the former, at least, seems generally distinguishable; further reappraisal of mainland populations required. Five subspecies currently recognized.

#### Subspecies and Distribution.

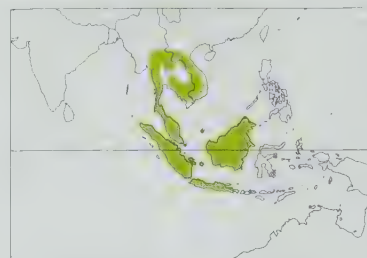
*E. j. friedmanni* Deignan, 1947 - SE Myanmar, Thailand (S to Isthmus of Kra) and Indochina.

*E. j. pallidus* Chasen, 1935 - S Thailand (S from Isthmus of Kra) and Peninsular Malaysia; formerly also Singapore.

*E. j. harterti* van Oort, 1909 - Sumatra, Riau Archipelago (Bintan), Bangka I and Belitung I.

*E. j. brookei* Robinson & Kloss, 1919 - Borneo and N Natuna Is.

*E. j. javanicus* Horsfield, 1821 - Java.



**Descriptive notes.** 21.5-23 cm; 74-84 g (*pallidus*), 73-87 g (*brookei*). A large, distinctive broadbill with purple, yellow and black plumage. Male has purple-red head, black lores; mantle dark brown, back blacker with yellow streaks, central back with concealed white feather bases, rump and uppertail-coverts yellow and black; wing-coverts blackish; flight-feathers dark brown, primaries with some small yellow spots, secondaries with bright yellow fringes forming patch; tail black, whitish spots near tip visible on undertail; underparts light purple-pink, undertail-coverts pure yellow; iris blue; bill blue, greenish tip.

black cutting edges; legs and feet greyish-violet. Female has hindcrown glossed grey, faint purplish band on upper mantle, throat and upper breast washed greyish. Juvenile is duller, head and upperparts pale brown marked with yellow, rows of large yellow spots on wings, pale yellowish-white throat, buffy breast to belly, sooty band across upper breast; immature has crown strongly washed with shades of yellow-green, purple markings on side of head, neck and belly. Races differ from nominate in larger size, maroon undertail-coverts, male with narrow black band across upper breast; *friedmanni* has metallic grey wash below, throat and upper breast appearing rosy violet; *pallidus* resembles previous, but is more vinaceous pink below with weaker grey wash; *harterti* is very like last, but darker on head and below, mantle maroon, underparts dark pink to pinkish-maroon, black breastband well developed, iris ultramarine to emerald-green; *brookei* differs from previous in blackish forehead, often pinker throat, less prominent breastband, iris usually greyish, occasionally light blue, female with less black on forehead. **VOICE.** Usual call a brief, sharp "wheoo", followed immediately by a loud, rising, rapid insect-like trill 5-6 seconds long which increases in tempo, final 2 or 3 notes fading away at lower pitch, often as duet with 1 bird starting shortly after other; can be stimulated to call by sudden loud noise (e.g. thunder, slamming of car door), but reported to respond sluggishly to tape playback; also, nasal "whee-u", descending "kyeow" squeak, rolled "keowr", yelping "keek-eeek-eeek".

**Habitat.** Variety of forest types, including logged forest, but particularly evergreen and mixed deciduous forest near streams and rivers, peat-swamp-forest, upland heath-forest and freshwater swamp-forest; also forest edge, overgrown rubber estates, *Albizia* groves, gardens, parks and around villages. Mostly to 1050 m; to 1220 m in Borneo and to 1500 m, probably mainly 500-900 m, in Java; apparently a lowland species in Indochina, but to c. 1100 m in Laos.

**Food and Feeding.** Predominantly insects, including orthopterans (grasshoppers, crickets, katydids), various beetles, homopteran and heteropteran bugs, caterpillars and other larvae; also spiders, small snails. In a study in Borneo, orthopterans eaten by this species found to be generally larger, c. 55 mm in length, than those taken by *E. ochromalus*. Small fruits, including figs (*Ficus*), recorded as eaten in Java and Sumatra; also, a bird found in Myanmar had the tail of a 10-cm lizard still protruding from its bill, suggesting that this was an unusually large prey item. Most prey plucked from foliage, including from underside of leaves, while in flight; often sits motionless, apart from searching movements of head, frequently directed upwards, then makes irregular, fluttering flight to glean prey before alighting on nearby perch. Also observed to flycatch in more elegant fashion. Pairs and small groups can be active all day.

**Breeding.** Breeds mainly during dry period following NE monsoon, with apparently extended season in S: Mar in S Myanmar, Jul and Dec in Thailand, Jun in Laos, Feb-Sept in Peninsular Malaysia, Mar-Nov in Sumatra, Apr on Belitung I, Nov-Jun in Java and Mar-Sept in Borneo. Nest, possibly built by both sexes, a huge, ragged-looking pear-shaped structure 75-90 cm long including hanging "tail", compactly woven from available material, mostly small twigs, roots, leaves, grass, moss (dead and fresh) and leaf skeletons, chamber lined with leaves, lateral entrance hole almost concealed by large "porch" made of twigs, leaves and grass, exterior decorated with e.g. lichen, green moss, caterpillar excreta and cocoons fastened with cobwebs, tendrils and plant stems, suspended c. 2.5-21 m up from thin branch close to tree trunk or from tall branch overhanging stream; a nest in Peninsular Malaysia was sited 0.5 m from active bees' nest, presumably for protection provided by the bees. Clutch 2-3 eggs; incubation and fledging periods unrecorded; in study in Borneo, parents still provided 70-80% of food to young 13 weeks after fledging, falling to 20-30% at 20 weeks.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon or locally common in Indochina, rare in N Thailand; locally common in suitable habitat in S part of range, but rare in NW Borneo (Brunei) and C & E Java. In Borneo, estimated density c. 10 birds/km<sup>2</sup> in primary forest at a site near Kuching (Sarawak). Occurs in several protected areas, e.g. Khao Yai and Kaeng Krachan National Parks and Khao Nor Chuchi Wildlife Sanctuary, in Thailand, Nam Bai Cat Tien National Park, in Vietnam, Taman Negara National Park and Panti Forest Reserve, in Peninsular Malaysia, Way Kambas National Park, in Sumatra, and Gunung Gede-Pangrango National Park, in W Java. In 1990 recorded from E Java, and in 1995 confirmed as still present on Bintan I (Riau Archipelago). Although recently thought to have become extinct in Singapore in 1950, it probably disappeared much earlier; old records from Pinang I (West Malaysia) considered not acceptable, but it may have occurred there in past. Earlier accounts indicate that this broadbill has long been locally common, uncommon or scarce through most of its range.

**Bibliography.** Andrew (1985), Bangs & Van Tyne (1931), Bezemer (1929), Chasen (1935, 1937), Chasen & Hoogerwerf (1941), David-Beaulieu (1932), Deignan (1945, 1947), Dekker & Dickinson (2000a), Dekker *et al.* (2000), Delacour (1951), Delacour & Jabouille (1940), Duckworth (1940), Duckworth *et al.* (1999), Eames & Robson (1992), Evans & Timmins (1998), Evans *et al.* (2000), Fogden (1965, 1970, 1972), Gee (1997a), Grantham (2000), Hellebrekers & Holmes & Phillips (1998), Hoogerwerf (1967), Hoogerwerf (1948), Hume & Davidson (1878), Jeyarajasingam & Pearson (1999), Kloss (1931), Kuroda (1933), Lekagul & Round (1991), MacKinnon & Phillips (1993), Madoc (1976), van Marle & Voous (1988), McClure (1998), Medway & Wells (1976), Mees (1986), Mitra & Sheldon (1993), Myers (1999), Oberholser (1932), Pearson (1975a), Rajathurai (1996), Robson (2000c, 2000d), Round



(1988), Sheldon *et al.* (2001), Smythies (1986, 1999), Stattersfield & Capper (2000), Stuart Baker (1934), Thewlis *et al.* (1996), Verheugt *et al.* (1993), Vowles & Vowles (1997), Wells (1985b, 1988), Wilkinson *et al.* (1991).

## 11. Black-and-yellow Broadbill

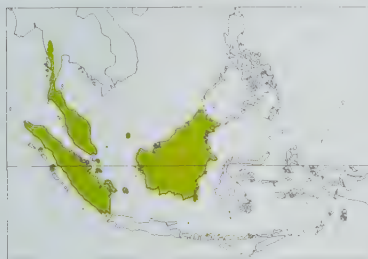
### *Eurylaimus ochromalus*

**French:** Eurylaime à capuchon **Spanish:** Eurilaimo Negrigualdo  
**German:** Halsband-Breittrachen

**Taxonomy.** *Eurylaimus ochromalus* Raffles, 1822, Singapore.

Birds from Banyak Is (off NW Sumatra) described as race *mecistus* and those from W Borneo (Saribas District of Sarawak) as race *kalamantan*; there is, however, considerable individual variation among all populations, which makes recognition of any geographical races hardly tenable. Monotypic.

**Distribution.** S Myanmar (Tenasserim), SW & S Thailand, Peninsular Malaysia, Riau Archipelago, Lingga Archipelago, Sumatra (including Banyak Is, Batu Is), Bangka I, Belitung I, N Natuna Is and Borneo (including Pulau Laut, off S coast).



**Descriptive notes.** 13.5-15 cm, 31-39 g. A small, distinctive broadbill with black, white, pink and yellow plumage. Male has black head and upperparts, broad white collar, conspicuous bold yellow markings on back and wings; blackish tail, yellowish spots on central feathers, whiter spots on outer ones; black breastband, rest of underparts vinaceous-pink, fading to pale yellow on belly and undertail-coverts; iris pale yellow; bill bright turquoise to cobalt-blue, green tip of upper mandible, black cutting edges; legs and feet horn-pink to bluish. Female has breastband broken in centre. Juvenile lacks distinct breastband, has pale

yellow supercilium, greyish-white underparts. **VOICE.** Insect-like bubbling trill, similar to that of a cicada (Cicadidae), starts with a few spaced sharp downslurred notes, rises and accelerates gradually into low quivering trill 8-12 seconds long, not unlike trill of *E. javanicus* but longer, acceleration slower, no introductory whistle, abrupt termination; often both partners call alternately, slightly overlapping; calls in response to sudden loud noises, less so to tape playback; also, plaintive, shrill "peep" by bird in company of trilling pair; other calls include guttural "keowrr" and squeaking "kyeeow", also "kor kor kor" by male at nest.

**Habitat.** Wide range of forest types occupied, including evergreen forest, mixed dipterocarp forest, heath-forest, swamp-forest (both freshwater and coastal), forest edge, secondary growth, also overgrown plantations, including cocoa, rubber and *Albizia*; adapts to logged forest and secondary habitats where large trees remain. To 700 m in Myanmar, Thailand and Peninsular Malaysia, to 900 m in Sumatra and to c. 1220 m in Borneo.

**Food and Feeding.** Primarily insects, including orthopterans (grasshoppers, crickets, katydids), mantises (Mantidae), various beetles (e.g. Cerambycidae, Scarabaeidae), hymenopterans, flies, alate termites (Isoptera), and caterpillars; in Borneo, found to consume smaller orthopterans (length c. 35 mm) than those taken by *E. javanicus*. Some small molluscs also recorded taken; also, stomach of 1 Bornean specimen contained orange-red berries with large dark pips, but evidence suggests fruit a very incidental component of diet. Small, scattered groups usually forage in middle and upper levels of forest. Flocks of up to 10-15 reported; solitary individual foraging from an exposed perch, usually in open parts of the canopy, may be occupying a lookout position as a member of a dispersed group. Usually sits quietly on perch, searching for prey; makes brief sallies to take prey from leaf surfaces while in flight, returning to different perch. Aerial insects (e.g. termites) sometimes seized in mid-air. Also observed clinging to tree trunks like a woodpecker (Picidae) when foraging. On occasion, individuals briefly join mixed-species foraging flocks.

**Breeding.** Most records coincide with onset of the dry season, but wide range of dates reported: Feb-Oct on mainland, Jan-Jul in Sumatra and Mar-Aug in Borneo. Large, untidy, pear-shaped hanging nest of moss, fungal mycelia and leaf skeletons, chamber lined with rough grass roots, bamboo leaves and leaf stalks, dimensions of 1 nest c. 17 × 13 × 10 cm, walls c. 3-8 cm thick, entrance hole 5 × 6-4 cm with protruding "step" below, and attached by loops of e.g. cane, grasses or twigs; usually suspended from branch or similar suitable site, including trees in plantations, 5-18 m above ground or water surface, but once in dense lower part of canopy c. 15-20 cm inside edge of foliage; some in Borneo placed close to bees' nests, this apparently a characteristic site for species there. Clutch 3 eggs, occasionally 2; no information on incubation and fledging periods. Nests sometimes parasitized by cuckoos (Cuculidae) in Peninsular Malaysia: records of adults feeding young of Indian Cuckoo (*Cuculus micropterus*), also of adults feeding unidentified cuckoo fledgling (Sept), and of clutch containing unidentified cuckoo egg.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Occurs in Kaeng Krachan National Park and Khao Chong Reserve and Khao Nor Chuchi Wildlife Sanctuary, in Thailand, in Taman Negara National Park and Pantu Forest Reserve, in Peninsular Malaysia, and in Kerinci-Seblat and Way Kambas National Parks, in Sumatra. Originally thought to be common to abundant throughout its range, and still considered locally common wherever suitable habitat remains. In Borneo, a study in primary forest near Kuching (Sarawak) indicated a population density of c. 10 birds/km<sup>2</sup>, and recent reports from Sabah suggest that the species survives well in logged forest. In W Sumatran islands all records are pre-1970, but available habitat suggests that it may still be present. Said to have been extirpated in Singapore in 1879, a date based on a single old record, but exact year of its disappearance uncertain; old records from Pinang I (W Malaysia) considered not acceptable, but probably occurred there at some time in the past. Habitat destruction within its range has been severe and extensive, with lowland forest drastically reduced and expected to have been destroyed completely within less than a decade. Despite its tolerance of secondary habitats, the species seems likely to survive in the long term only in protected parts of its range and in higher-lying forested areas.

**Bibliography.** Anon. (1988d), Collar *et al.* (2001), Davison (1997a, 1997b), Dekker & Dickinson (2000a), Dekker *et al.* (2000), Duckworth & Kelsh (1988), Fogden (1965, 1970, 1976), Gore (1968), Holmes (1969, 1994, 1996), Holmes & Philipps (1998), Jeyarajasingam & Pearson (1999), Kloss (1930), Lambert (1989a, 1992a), Lekagul & Round (1991), Lim Kim Seng (1992), MacKinnon & Philipps (1993), Madoc (1976), van Marle & Voous (1988), Medway & Wells (1976), Mees (1986), Meyer de Schauensee (1934), Meyer de Schauensee & Ripley (1940), Mitra & Sheldon (1993), Nash & Nash (1985), Nee & Guan (1993), Oberholser (1932), Pearson (1975a), Pfeffer (1960), Prentice (1988), Richmond (1903), Ripley (1944), Robinson (1915, 1927), Robinson & Kloss (1919b), Robson (2000d), Round (1988), Sheldon *et al.* (2001), Smythies (1986, 1999), Thompson (1966), Verheugt *et al.* (1993), Vowles & Vowles (1997), Wells (1976, 1984, 1985b), Wells *et al.* (1979), Wilkinson *et al.* (1991).

## Genus *SARCOPHANOPS* Sharpe, 1879

## 12. Mindanao Wattled Broadbill

### *Sarcophanops steerii*

**French:** Eurylaime de Steere **German:** Graurücken-Breittrachen **Spanish:** Eurilaimo de Mindanao  
**Other common names:** Steere's/Mindanao Broadbill; Wattled Broadbill (when lumped with *S. samarensis*)

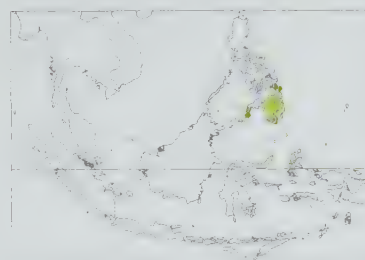
**Taxonomy.** *Eurylaimus Steerii* Sharpe, 1876, Basilan, Philippines.

Genus often merged into *Eurylaimus*, but significant morphological differences. At the same time was considered conspecific with *S. samarensis*, but the two differ strikingly in plumage coloration and better treated as forming a superspecies. Race *mayri* possibly not always separable from nominate; further study needed. Two subspecies recognized.

**Subspecies and Distribution.**

*S. s. steerii* (Sharpe, 1876) - SW Mindanao (Zamboanga Peninsula), Malamaui and Basilan, in Philippines.

*S. s. mayri* (Salomonsen, 1953) - Dinagat, Poneas, Siargao and C, S & E Mindanao.



**Descriptive notes.** 16.5-17.5 cm; 33.7-44.4 g (*mayri*). Distinctive eurylaimid with prominent blue eye wattles. Male has maroon-purple forehead and crown, black face and throat, white collar; mantle and back dark grey, lower back to tail rufous, rump and uppertail-coverts with purple wash; wings black, prominent white band on tertials, yellow band across secondaries; underparts lilac, centre of belly to vent yellowish-white; iris green to blue or yellow, blue fleshy wattle up to 6 mm wide around eye; bill light blue; legs and feet bluish. Differs from *S. samarensis* in larger size, whiter collar, grey on upperparts, yellow in wing. Female is like

male, but underparts pure white. Immature has white throat, gradually becoming black, olive-green crown and wash on upperparts, ill-defined wingbar more buffish-pink than white, eye wattle yellow. Race *mayri* is slightly smaller than nominate, male underparts usually paler. **VOICE.** Poorly known; one call said to be a plaintive whistle.

**Habitat.** Rainforest; dipterocarp and mixed dipterocarp forest, including remnant patches, hillside secondary forest, also secondary forest close to undisturbed riverine forest; occasionally mangroves, scrub forest. Mostly lowlands, usually well under 1000 m; occasionally to 1220 m.

**Food and Feeding.** Insectivorous, but no details of prey species. Forages at middle and lower levels, singly, in pairs, or in small flocks of up to 6 birds. Makes short sallies to glean insects from vegetation, or to seize them in flight, before returning to same or nearby perch; also observed chasing insects by jumping from branch to branch. Insects may be beaten against a branch before being swallowed. Sometimes in mixed-species foraging flocks.

**Breeding.** Few records; females with egg in oviduct in Apr-May, and immatures in Apr, Aug, Dec and Jan; main season probably Apr-Jun. Nest described as large, elaborate, shaped like hanging purse. No other data.

**Movements.** Resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species; present in Mindanao and the Eastern Visayas EBA. Uncommon to rare on Mindanao, Basilan and Malamaui; recently considered fairly common on Dinagat and Siargao, but now very local and uncommon on both islands. Since 1980, recorded at only a handful of sites, three of those in Mindanao and including Mount Apo National Park; also from Siargao (a protected area) and Poneas. As with all forest broadbills, this species is sensitive to habitat disturbance; has probably disappeared from many areas, such as in S Mindanao. Deforestation of lowlands has occurred extensively throughout its range, and is continuing at rapid pace; little original forest is left on any of the islands occupied by this species, and most remaining forest lies above 1000 m. This broadbill's range is almost certainly now highly fragmented, and its numbers are thought to be in serious decline.

**Bibliography.** Collar, Andreev *et al.* (2001), Collar, Crosby & Stattersfield (1994), Collar, Mallari & Tabaranza (1999), Dekker & Dickinson (2000a), Dekker *et al.* (2000), Delacour & Mayr (1945, 1946), Dickinson *et al.* (1991), Evans *et al.* (1993), Gee (1997b), Gonzales & Rees (1988), Hachisuka (1934), Kennedy *et al.* (2000), McGregor (1909-1910), duPont (1971), duPont & Rabor (1973), Stattersfield & Capper (2000), Stattersfield *et al.* (1998).

## 13. Visayan Wattled Broadbill

### *Sarcophanops samarensis*

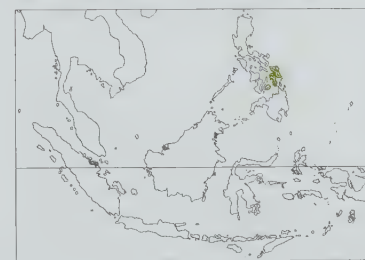
**French:** Eurylaime de Samar **Spanish:** Eurilaimo de las Visayan  
**German:** Purpurrücken-Breittrachen

**Other common names:** Samar/Visayan Broadbill; Wattled Broadbill (when lumped with *S. steerii*)

**Taxonomy.** *Sarcophanops Samarensis* Steere, 1890, Catbagan, Samar, Philippines.

Genus often merged into *Eurylaimus*, but significant morphological differences. Was at same time considered conspecific with *S. steerii*, but the two differ strikingly in plumage coloration and better treated as forming a superspecies. Monotypic.

**Distribution.** Philippine islands of Samar, Leyte and Bohol.



**Descriptive notes.** 14.5-15 cm; 33.5-41.5 g. Distinctive eurylaimid with prominent blue eye wattles. Male has black throat, lores and ear-coverts, purple crown, mottled grey nuchal collar; mantle purple, lower back to tail rufous with purple tinge; wings black, prominent whitish band across tertials and lilac-pink band across secondaries and tertials; underparts lilac, centre of belly to undertail-coverts yellowish-white; iris variably green, orange or blue (dependent on angle of light), broad sky-blue fleshy wattle around eye; bill bluish; legs and feet bluish to greyish. Differs from *S. steerii* in smaller size, grey hindcollar, purple man-



tle, lilac in wing. Female resembles male, but underparts pure white. Juvenile has dark brown head with grey-washed crown, whitish collar, olive and grey-brown upperparts tinged rufescent, grey-brown underparts. **VOICE.** Calls rarely: insect-like "tik, tik, t-rrrrrrrr", usually twice with interval of 2-3 seconds; not unlike a *Eurylaimus* call or call of Blue Fantail (*Rhipidura supercilialis*); also, short, rather quiet whistles heard on Bohol, possibly contact call.

**Habitat.** Primary forest, frequently in areas with limestone outcrops. Usually in lowlands, at 100-600 m on Samar and c. 300-750 m on Bohol; rarely to c. 600 m on Leyte.

**Food and Feeding.** Records mention only "small insects" and, once, a green caterpillar. Forages singly, in pairs, or in small groups up to 5 individuals, usually at lower levels of forest. Sometimes joins mixed-species foraging flocks.

**Breeding.** Birds in breeding condition and moulting in Mar-May, young juveniles in May and Jul, and immatures in Apr, Jul and Aug. Nest not known, presumably similar to that of *S. steerii*. No other data.

**Movements.** Resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Mindanao and the Eastern Visayas EBA. Since 1980 recorded only from Bohol, where not infrequent in Rajah Sikatuna National Park; thought to be still present elsewhere on that island, but normally silent and unobtrusive, and believed to be probably under-recorded. Formerly considered locally abundant on Samar, and possibly still locally common in first half of 20th century; present status there and on Leyte uncertain, but probably rare. Range very small and habitat loss severe, with vast majority of forested areas already destroyed; this species' presence on forested limestone outcrops is considered not so much a characteristic trait, but the consequence of habitat loss elsewhere. Most of the small areas of surviving lowland forest are under immediate threat from logging and other damaging operations; even in Rajah Sikatuna illegal tree-cutting activities and expansion of agriculture pose threats, although these pressures now being minimized by recent management initiatives. Population and area of distribution almost certainly still decreasing very rapidly. Further research required to determine this broadbill's ecology and breeding biology, as well as its current status. The identification of suitable sites for protection should be then treated as a priority.

**Bibliography.** Brooks *et al.* (1996), Collar, Andreev *et al.* (2001), Collar, Crosby & Stattersfield (1994), Collar, Mallari & Tabaranza (1999), Dekker & Dickinson (2000a), Dekker *et al.* (2000), Delacour & Mayr (1946), Dickinson *et al.* (1991), Gee (1997b), Gonzales & Rees (1988), Hornsokov (1996), Kennedy *et al.* (2000), McGregor (1909-1910), Parkes (1973), duPont (1971), Rabor (1938), Rand & Rabor (1960), Stattersfield & Capper (2000), Stattersfield *et al.* (1998).

## Genus *CORYDON* Lesson, 1828

### 14. Dusky Broadbill

#### *Corydon sumatranus*

**French:** Eurylaima corydon **German:** Braunkehl-Breittrachen **Spanish:** Eurilaimo Sombrio

**Taxonomy.** *Coracias Sumatranus* Raffles, 1822, interior of Sumatra.

Individual variation considerable. Several described races considered probably untenable: *morator* (from S Thailand), *ardescens* (SE Thailand) and *khmerensis* (Cambodia and S Indochina) regarded as inseparable from *laensis*, and *pallascens* (Thai-Malay Peninsula) better treated as synonymous with *sumatranus*; *orientalis* possibly indistinguishable from *brunescens*; further study of geographical variation is desirable. Four subspecies recognized.

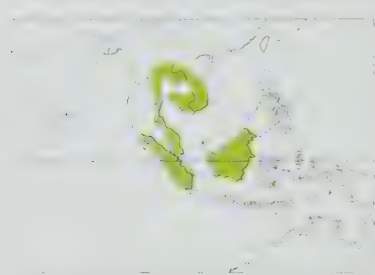
**Subspecies and Distribution.**

*C. s. laensis* Meyer de Schauensee, 1929 - S Myanmar, Thailand (except extreme S) and Indochina.

*C. s. sumatranus* (Raffles, 1822) - extreme S Thailand S to Sumatra.

*C. s. brunescens* Hartert, 1916 - N Natuna Is and NW Borneo (Sarawak).

*C. s. orientalis* Mayr, 1938 - Borneo (except NW).



**Descriptive notes.** 24-28.5 cm; c. 140 g. A big, thickset, blackish broadbill with massive pinkish bill, small white patch in the primaries. Adult has blackish-brown head and body, crown and nape sometimes tinged olive, rump and uppertail-coverts strongly olive-tinged; concealed area of pale orange and white feathers, rarely also few scarlet ones, on mantle; wings brown, white at bases of primaries; tail brown, all but central feather pair with white subterminal bar, variable in extent; throat and upper breast whitish with variable amount of orange-brown feather edgings, rest of underparts dark brown; iris dark brownish-red, purplish orbital skin; bill variable, pinkish to yellowish-horn, usually purple with tip light blue-grey, grey cutting edges; legs and feet pinkish-grey or browner. Juvenile is much browner, no orange feathers in mantle, less white in wing and tail, darker throat. Races differ mainly in colour of throat patch, amount of olive in plumage, and colour of concealed dorsal spot, but variable: *laensis* is darker than nominate, more sooty black, with whiter throat, more scarlet-coloured dorsal spot, perhaps more purple-toned bill and facial skin; *brunescens* is much browner than previous, without olive tones, throat usually much deeper rufous-brown, dorsal spot scarlet; *orientalis* is on average larger than previous, throat much paler, more buff than rufous. **VOICE.** Commonest call a series of c. 6-8 screaming notes on ascending scale, "hi-ky-ui, ky-ui, ky-ui, ky-ui, ky-ui" with "ky" note stressed, sometimes notes more as "pee-u" with terminal "ki-ip"; other calls include shrill, thin "pssecoo", high piercing "tsiu", far-carrying croak and rattling laugh; in Laos, repeated quavering "ch whit" in flight, and 4-7 accelerating "chwoo" or "phwoo" notes and occasionally "pepepepepe" near nest; in Thailand, clear, whistled "pee-u" in flight.

**Habitat.** Primary forest, logged evergreen and deciduous forest, mixed dipterocarp forest, also mossy forest at higher altitudes; also forest on limestone, freshwater peat swamp-forest, gallery forest, and tall trees at plantation edges. Lowlands and hills, up to 1220 m in Myanmar, at least 1000 m in Thailand, and 2000 m in Indochina; possibly as high as 1525 m in Peninsular Malaysia; to c. 1000 m in Sumatra and locally to 1830 m in Borneo; to 300 m in N Natuna Is.

**Food and Feeding.** Insects, including orthopterans (grasshoppers up to 10 cm long, crickets), beetles (e.g. Scarabaeidae), large hemipteran bugs, large flying insects, ants; also small lizards. Prey gleaned from branches and leaves after a brief sally; large aerial insects also captured by upward leap from perch. Gregarious; occurs in foraging groups of up to 10-20, most active in early morning and evening, and often noisy. Also spends much time in perching silently, searching for

prey. Forages in upper storey of forest, at 15-30 m, generally much higher up than other broadbills in same areas.

**Breeding.** The few records indicate nesting in late dry season in N, but earlier, in wettest part of year, farther S: Mar-May in Myanmar but Dec-Jun in Tenasserim; Apr-Dec in Thailand, Mar-May in Laos and Aug-Sept in Cambodia; Sept-Jun, mostly Mar-May, in Peninsular Malaysia; Feb-Nov in Sumatra and Nov-May in Borneo. Co-operative breeder, up to 10 birds recorded at single nest. Large, bulky but compact pear-shaped structure c. 30 cm wide and often 2 m or more long, with or without hanging "tail" up to 70 cm long, built by adults and usually other group-members, from twigs, small roots, epiphyte strands, bamboo leaves and dry moss, plant stems and similar material, lined with green and dried leaves, and decorated with cocoons, caterpillar excreta, spider egg cases, leaves and other material (e.g. epiphyte runners with small living leaves), with entrance hole 5 x 6 cm about a third down from top and almost concealed by large "porch"; suspended from tip of strong plant part such as branch or palm tendril to hang 4-13 m above open area such as river or pool, dry riverbed, forest clearing or road. Clutch 2-4 eggs; details of incubation and fledging not recorded, and unclear if helpers assist breeding pair in these tasks.

**Movements.** Resident; some records at higher altitudes possibly involve individuals wandering outside normal range.

**Status and Conservation.** Not globally threatened. Generally uncommon. Apparently decreasing, or possibly disappearing, in parts of N Thailand; recent reports from several localities in Laos, but status there uncertain, possibly locally common. Locally common in suitable habitat in Thai-Malay Peninsula, and the same may apply to Sumatra. In Borneo, locally common in some parts (such as E Kalimantan) and scarce in other areas (such as Sabah), and only 3 records from Brunei. Occurs in Kaeng Krachan National Park and Khao Nor Chuchi Wildlife Sanctuary, in Thailand, in Phou Xang He National Biodiversity Conservation Area, in Laos, in Nam Bai Cat Tien National Park, in Vietnam, in Taman Negara National Park and Panti Forest Reserve, in Peninsular Malaysia, and in Way Kambas National Park, in Sumatra. Stated to have become extinct in Singapore in late 19th century, but circumstances unclear; although old records from Phuket I and Pinang I considered not acceptable, it probably occurred on those islands in the past. A study of the effects of logging on bird populations in Sabah suggested that this species and others declined following these operations, although a nest was found in recently logged forest.

**Bibliography.** Anon. (1988d), Bangs & Van Tyne (1931), David-Beaulieu (1932), Deignan (1936b, 1945, 1947), Dekker & Dickinson (2000), Dekker *et al.* (2000a), Delacour (1929, 1951), Delacour & Jabouille (1940), Duckworth, Salter & Khounboline (1999), Duckworth, Tizard *et al.* (1998), Eames & Robson (1992), Engelbach (1938), Evans & Timmins (1998), Evans *et al.* (2000), Gore (1968), Holmes & Burton (1987), Holmes & Philipps (1998), Hopwood (1919), Jeyarajasingam & Pearson (1999), Lambert (1992a), Lambert *et al.* (1994), Lekagul & Round (1991), Lim Kim Seng (1992), MacKinnon & Philipps (1993), Madoc (1976), van Marle & Voous (1988), Mayr (1938b), Medway & Wells (1976), Meyer de Schauensee (1946b), Mitra & Sheldon (1993), Nash & Nash (1985), Oberholser (1932), Oustalet (1903), Robinson (1927), Robinson & Kloss (1919a), Robson (1998, 2000d), Robson, Eames, Newman *et al.* (1991), Robson, Eames, Nguyen Cu *et al.* (1993b), Round (1984, 1988), Sheldon *et al.* (2001), Silvius & Verheugt (1986), Smythies (1986, 1999), Stuart Baker (1922-1935, 1934), Thewlis *et al.* (1996), Verheugt *et al.* (1993), Vowles & Vowles (1997), Wells (1985b), Wilkinson *et al.* (1991).

## Subfamily PSEUDOCALYPTOMENINAE

## Genus *PSEUDOCALYPTOMENA*

### Rothschild, 1909

### 15. Grauer's Broadbill

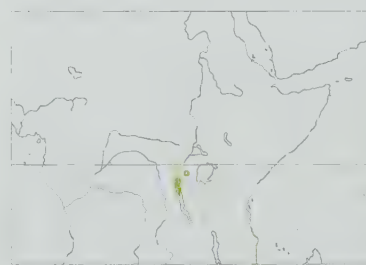
#### *Pseudocalyptomena graueri*

**French:** Eurylaima de Grauer **German:** Blaukehl-Breittrachen **Spanish:** Eurilaimo de Grauer  
Other common names: African Green Broadbill

**Taxonomy.** *Pseudocalyptomena graueri* Rothschild, 1909, 50 miles [80 km] west of Russisi, north of Lake Tanganyika, 2000 m, east Zaire.

The populations in Zaire and Uganda, respectively, were once thought to represent geographical races, separable by bill width, but the difference now considered to be due to individual variation; they do, however, exhibit apparent differences in ecology and behaviour, and further study may demonstrate that they merit taxonomic separation. Monotypic.

**Distribution.** E Zaire (Itombwe Mts; Mt Kahuzi, W of L Kivu) and W Uganda (Bwindi-Impenetrable Forest).



**Descriptive notes.** 13.6-15.6 cm; 29-32.5 g. A small, rather short-tailed, green broadbill. Adult has finely black-streaked buff crown, narrow black eyestripe, light blue ear-coverts, moustachial area narrowly streaked black; nape and upperparts bright green; flight-feathers dark brown, edged green; tail green, tinged blue at base, outer feathers with brown inner webs; chin white, throat and breast pale blue, belly and flanks pale green, undertail-coverts variably all blue to blue-tipped green; iris blackish; bill black; legs and feet grey-green. Immature is duller, with green undertail-coverts. **VOICE.** Weak "tsi-tsi" or "cree-cree" repeated 3-8 times at c. 4 per second, similar to call of Oriole Finch (*Linurgus olivaceus*); in Uganda, also high-pitched "prrrr" at c. 30-second intervals, and high, feeble notes probably as contact; when breeding, long very high-pitched bell-like ringing in flight, but uncertain whether produced vocally or mechanically.

**Habitat.** Occupies primary montane forest, forest edge and bamboo-dominated forest, occasionally occurring in isolated trees in clearings and agricultural areas; 1760-2480 m in Zaire, 2060-2285 m in Uganda. In Zaire, occurs mainly below the bamboo zone, and appears to favour forest edge near cultivation, in areas of dense foliage, preferring upper levels of fairly tall trees; in Uganda, strongly associated with stands of the dominant tree *Chrysophyllum gorungosanum* on steep slopes, seeming to shun valley bottoms and areas where these trees not present in good stands, and prefers



upper portions of understorey. These observations suggest some ecological differences between the two populations.

**Food and Feeding.** Three individuals observed to feed on the orange fruits of *Xymalos monospora* (Monimiaceae). Contents of five stomachs revealed a variety of food items: invertebrates were small beetles, a small snail, insects and insect larvae; vegetable matter comprised small seeds, small flowers, flower buds, remains of small fleshy fruits, and orange and green fruits. When rediscovered, in 1933, was observed in a large tree with abundant juicy berries. Forages singly or in small flocks of up to 10 birds. In Zaire, prefers the upper branches of fairly tall trees at levels of 7.5-25 m. In Uganda, found in upper parts of the forest understorey c. 2.5-3 m from ground and in *Neoboutonia* trees, feeding in the manner of a waxbill (*Estrilda*); also seen to join mixed-species foraging flocks. Sometimes forages near human habitation. In a recent observation in Uganda, 3 individuals feeding at 4-7 m in fruiting trees alternated between active feeding for 10-15 minutes and sitting motionless, either higher up in the food tree or in trees nearby, for 35-50 minutes. In addition, gleans insects from foliage in upward-directed sallies; possibly also takes them in mid-air. Also seen to climb up vertical branches and on underside of horizontal ones in manner of a woodpecker (Picidae), presumably seeking invertebrate prey, behaviour unlike that of other eurylaimids.

**Breeding.** Birds in breeding condition in Jul-Aug, immature seen in Jul and juvenile with adult in Aug in Zaire; fledged young fed by adult in Mar and active nest found in Apr in Uganda. 1 nest found, a spherical structure c. 20-25 cm in diameter with side entrance c. 5 cm wide, with external layer of green lichen, suspended c. 11 m up in mid-canopy from outermost branches of a tree and directly overhanging a stream, in open scrubby vegetation with many 20-m trees; presumed female was sitting in nest while partner perched quietly nearby. No other data.

**Movements.** Resident. Possibly some short local movement; recent Aug record from Mubwindi Swamp, in Bwindi-Impenetrable Forest National Park, Uganda, thought perhaps to have involved an individual outside its normal range.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Albertine Rift Mountains EBA. Quite common but localized in Itombwe Mts, but rare in the Impenetrable Forest; experienced observers in Uganda usually encounter it about once every 2 days. World range very small, and fragmented. Forest clearance around villages, commercial logging and mining activities all identified as potential threats, as well as recent dramatic increases in region's human population owing to huge influx of refugees (large numbers concentrated at foot of Itombwe's E escarpment and N of there); following recent crop failures, clearance for agriculture along edges of gallery montane forest in Itombwe has greatly increased. Species is well protected in Bwindi-Impenetrable Forest National Park, in Uganda. In Zaire, population in the mountains W of L Kivu is perhaps safeguarded in Kahuzi-Biéga National Park, although the area is under threat, and montane habitat in Itombwe, although still relatively intact, is not protected. The presence of seeds in stomachs of this eurylaimid could indicate that it plays an important role in dispersal of seeds of forest plants.

**Bibliography.** Ash *et al.* (1991), Aspenlind (1935), Butynski & Kalina (1993), Butynski *et al.* (1997), Byaruhanga *et al.* (2001), Chapin, J.P. (1953), Chapin, R.T. (1978), Collar & Stuart (1985, 1988), Collar *et al.* (1994), Demey (2000), Dowsett (1985, 1990), Dowsett & Dowsett-Lemaire (1993), Dowsett & Forbes-Watson (1993), Fishpool & Evans (2001), Friedmann (1970), Friedmann & Williams (1968, 1970), Keith *et al.* (1992), Lindsell (2001), Lippens & Wille (1976), Lowe (1924, 1931), Mackworth-Praed & Grant (1970), Omari *et al.* (1999), Prigogine (1971, 1974, 1978, 1985), Robertson (1997), Rockefeller & Murphy (1933), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stevenson & Fanshawe (2001), Vande weghe (1992), Wilson & Catsis (1990).

Class AVES  
Order PASSERIFORMES  
Suborder EURYLAIMI  
**Family PHILEPITTIDAE (ASITIES)**



- Small, short-tailed, largely frugivorous and nectarivorous forest birds, males brightly coloured, two species with long, decurved bill.
- 9-16.5 cm.



- Madagascar.
- Lowland to high-altitude rainforest, humid valleys in dry deciduous forest.
- 2 genera, 4 species, 4 taxa.
- One species threatened; none extinct since 1600.

### Systematics

With their remarkable form and coloration, and occurring exclusively on the island of Madagascar, where so much else is bizarre, the asities have had a long voyage around the taxonomy of the bird world, and one that is clearly not yet over. According to the morphology of the syrinx and the stapes, however, they are clearly suboscines. This puts them in a group with the other Old World suboscines, including the pittas (Pittidae) and the broadbills (Eurylaimidae), and with many New World groups such as the ground-antbirds (Formicariidae). On the basis of hind-limb morphology, DNA-DNA hybridization studies, nest structure and syrinx morphology, the Philepittidae fall into the same clade as the pittas and the broadbills. The proximity of this relationship, however, is unclear. Recent mtDNA cytochrome *b* data, along with syrinx morphology, suggests that they are best considered as a subfamily, Philepittinae, within the Eurylaimidae. Indeed, the syrinx morphology of Grauer's Broadbill (*Pseudocalyptomena graueri*) suggests that that species is closer to the Philepittidae than it is to the other broadbills. It seems likely that an ancestral African broadbill invaded Madagascar around the time when the lineage leading to Grauer's Broadbill split off from the lineage which led to the other African broadbills.

Syrinx morphology and other taxonomically conservative characters clearly show that *Philepitta* asities and *Neodrepanis* sunbird-asities belong in the same group, although on the basis of readily apparent structural differences they have often been treated as forming two separate subfamilies. Indeed, over the years, the two species in the genus *Philepitta* have moved through the starlings (Sturnidae), the birds-of-paradise (Paradisaeidae) and the sunbirds (Nectariniidae), before being eventually confirmed as suboscine. The *Neodrepanis* sunbird-asities are very similar in superficial form to the sunbirds, and it was in the Nectariniidae that they were placed until a 1951 study showed them to possess a suboscine syrinx. The generic name "*Neodrepanis*", incidentally, alludes to the *Drepanis* Hawaiian honeycreepers, which share the extravagantly decurved bill shape. It does not indicate any taxonomic relationship between the two groups.

### Morphological Aspects

The family Philepittidae contains four species in two quite distinct genera. The morphological distinctions from their closest

relatives, the broadbills, include the possession of twelve tail feathers, and the fact that the tarsi are covered with regular scutes, a condition known as taxaspidian scutellation; other distinctive features are a very short tail, an unusually long outer primary, and a syrinx encased in a heavy uppermost bronchial ring. In addition, all four species have a tongue that is adapted to nectar-feeding, with a tip that is more or less markedly forked and brush-coated. The long outer primary makes a slight buzzing noise when the bird flies (see also Voice); this noise, especially in the case of the Yellow-bellied Sunbird-asy (*Neodrepanis hypoxantha*), seems to be some kind of sexual signal, as the emargination of this primary is very marked on males and the buzzing noise is consequently rather loud. There appears also to be a mechanical element, probably produced by the wings, in the noises made during the displays of Velvet Asities (*Philepitta castanea*).

Around the eyes, the breeding males of all four species have remarkable wattles or caruncles, largely blue or green in colour. This colour is produced by ordered arrays of collagen fibres, representing what is, so far as is known, a unique mechanism for colour production in animals. In addition, the wattles have small blisters or papillae over their surface, often, as instanced by the Yellow-bellied Sunbird-asy, with paler or brighter tips. Both *Neodrepanis* species also have a similar patch of brightly coloured skin on the base of the bill. The wattle is present, or is most prominent, in the breeding season, and males are capable of enlarging the wattle when displaying to other males or to females. It is possible to watch, for instance, an agitated male Velvet Asity as it "pumps up" the wattle until the horns over the bill touch. During the non-breeding season, the wattle may be reduced to a narrow, pale pink flap of skin or may even disappear almost completely, this being especially so with Schlegel's Asity (*Philepitta schlegeli*) and the Common Sunbird-asy (*Neodrepanis coruscans*). On other individuals, the wattle may be little less conspicuous than in the breeding season.

All philepittid species also show very marked sexual dichromatism, the males being much the more brightly coloured. The dominant colours are yellow and black, while the two sunbird-asities are, in addition, splendidly marked with iridescent blues on the feathers of the mantle, scapulars, wing-coverts and rump.

Both members of the genus *Philepitta*, the Velvet and Schlegel's Asities, are rotund, almost tailless birds with a slim, slightly decurved, medium-length bill, short wings and, at least in the case of the breeding male, dense, intensely coloured plum-



The asities are endemic to Madagascar and form a family of four species in two distinctive genera. Nowadays it is generally agreed that they are closely related to the broadbills (Eurylaimidae), but in the past the genus *Philepitta* was variously thought to belong with the starlings (Sturnidae), birds-of-paradise (Paradisaeidae) or sunbirds (Nectariniidae). All members of the family are characterized by a short tail, a long outer primary and a tongue that is adapted for feeding on nectar. The brightly coloured caruncle at wattle around the eye of **Schlegel's Asity** is typical of breeding males in all species.

[*Philepitta schlegeli*, Ampijoroa, Madagascar.  
Photo: Simon Harrap]



age. The velvetiness of the black coloration is remarkable, and the bird seems to absorb light as it sits in the forest understorey. The bill length of Velvet Asities does not vary between the sexes, but it does seem to be very variable within the population as a whole, although this phenomenon has not been related to any particular ecological characteristics.

The sunbird-asities are tiny, short-tailed birds with a long, decurved bill and short legs. Their adaptation to nectar-feeding goes further than that of the *Philepitta* asities in that they have a tubular tongue. The bill is extremely narrow at the tip, and is of a similar shape to that of many of the nectar-bearing spurs found on such flowers as *Bakerella* and *Impatiens*. This similarity has suggested to some authors that a co-evolutionary process involving bill shape and flower shape has taken place. On the other hand, many of the flowers at which sunbird-asities feed do not have long spurs, and the bill is often not inserted far into flowers, as the tongue is apparently sufficiently long to reach the nectar.

It appears that all four species in the family have delayed male plumage maturation. Sexually mature males in entirely female plumage have been recorded for the Velvet Asity and for both species of *Neodrepanis*. The moult of the sunbird-asities closely resembles that of the "true" sunbirds of the family Nectariniidae in that both groups have two annual body moults, the first in the year giving rise to an "eclipse" plumage in the male. In the case of the Common Sunbird-asity, and probably the Yellow-bellied species, too, however, the two feather generations are similar on the breast and belly, and only the iridescent upperpart feathers lose their breeding-season brightness. The *Philepitta* asities apparently have only one moult, which is postnuptial, and which, in Velvet Asity males, leads to a "non-breeding" coloration made up of yellow fringes on the majority of the black body and wing-covert feathers. This gives way to a "breeding" plumage through the shedding of the yellow tips, leaving the black feather bases remaining.

The situation with Schlegel's Asity is less clear, as the males appear to have a "non-breeding" plumage that is similar to that of the females. This may indicate that, as with the *Neodrepanis* sunbird-asities, they have two complete moults each year. It is, however, also possible that these female-plumaged birds are subadults, and that, while they are sexually mature, they are exhibiting delayed plumage maturation rather than an "eclipse" plumage. It is certainly true that individuals in "partial male" plumage, such as those showing full wattles or patches of black and yellow on the head and breast, can occur at any time of the year, including in the middle of the breeding season, and it may therefore be that all males in non-"breeding" plumage are young ones. If this is the case, then adult Schlegel's Asities have one moult per year, and the

males lack the extra refinement shown by Velvet Asities, that of having yellow friable tips on the fresh plumage.

## Habitat

The centre of distribution of the Philepittidae is the eastern Malagasy rainforests, to which all members of the family except Schlegel's Asity are restricted. All three rainforest species occur from the far south of the rainforest belt, in Andohahela, to the far north, at least to the Tsaratanana massif and, in the case of the Velvet Asity, in the east to the seasonally dry rainforests south of Daraina. None, however, occurs at Amber Mountain, an isolated rainforest block in the far north.

The Common Sunbird-asity is the only member of the family that has been recorded from the central plateau, where it has been seen a few times at Ambohitantely Special Reserve (see Movements). The Velvet Asity is found at all elevations, although it tends to be scarcer in true low-altitude forest, below about 400 m, and is apparently absent, as are the three other philepittid species, from littoral forest on sand. It is also scarcer or absent in high-altitude ericoid forest. It overlaps with Schlegel's Asity on the lower slopes of the Manongarivo massif, in the western part of the humid Sambirano region of north-west Madagascar.

The two sunbird-asities exhibit one of the few known cases of altitudinal replacement in the Malagasy forest bird community. The Common Sunbird-asity is scarce at low altitudes, often completely absent below 400 m, and certainly absent from littoral forest on sand. It may become much more common in mid-altitude forest at around 800 m, and is often abundant at around 1000-1200 m, especially where there are large numbers of epiphytic mistletoes. The species is scarcer on the drier, western slopes of massifs, and may be absent altogether from forest in deep rainshadow, such as that on the eastern side of Zahamena. The reasons for this are probably related to the lower abundance of flowering parasitic and epiphytic plants in such habitats.

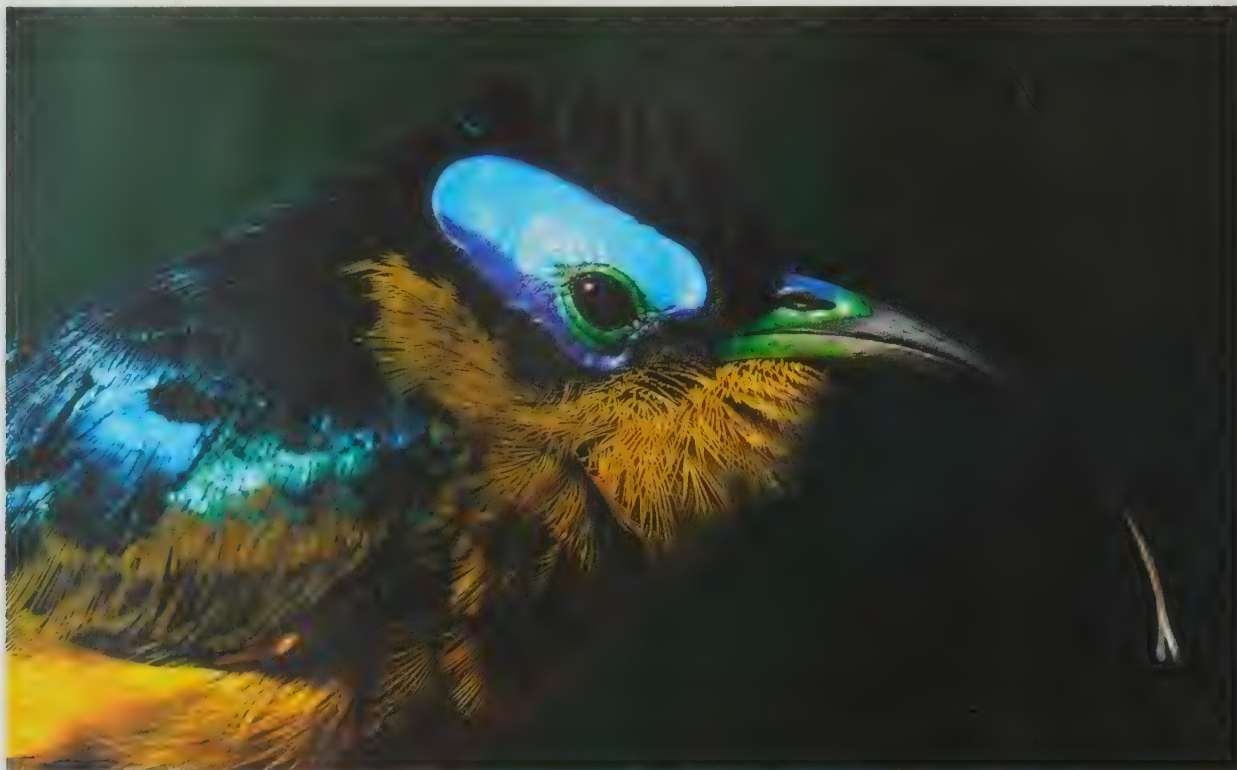
In general, the Common Sunbird-asity is found in valley bottoms at up to about 1300-1500 m, where it overlaps in distribution with the Yellow-bellied Sunbird-asity, which is often found on ridgetops at the same elevation. Above this, the latter species takes over, until, from about 1600 m up to the level where the forest runs out, at 2000-2500 m, it is usually the only *Neodrepanis* present. The zone of transition depends to some extent on the height of the mountain. At Ranomafana, where summits reach only 1375 m, the Yellow-bellied Sunbird-asity is found down to about 1100 m in mossy forest 5-8 m



tall. Conversely, on the Tsaratanana massif, at 2875 m Madagascar's highest, Common Sunbird-asities ascend to 1800 m, although still in forest 15-20 m high; on this impressive mountain, Yellow-bellied Sunbird-asities occur at up to 2650 m, in the dense mossy forest.

Until very recently, the Yellow-bellied Sunbird-acity was thought to be very rare, and even possibly extinct (see Status and Conservation), but this impression seems to have been due to the lack of fieldwork in higher-altitude forest. This species is now known to be present in eastern Madagascar in almost all blocks of forest above 1600 m, and in some well below this, from Tsaratanana in the north to Andohahela in the south.

Schlegel's Asity has a completely different distribution pattern. It is fairly abundant in lowland seasonally dry rainforest on the western slopes of Manongarivo, and it occurs in similar forest to the north as far as Andavakoera; from there, it is present in seasonal and dry forest southwards to about 100 km north of Morondava. There is an additional, unconfirmed report of this species from very dry forest around Ankazoabo, well to the south of other records. The asity's preferred habitat seems to be the more humid valley bottoms, as, for example, at Ampijoroa, and forest in canyons in pinnacle karst, for instance at Bemaraha and Namoroka. While Schlegel's Asity will make short visits to flowering trees in drier parts of valley sides, it is absent from dry plateau forest on sand at



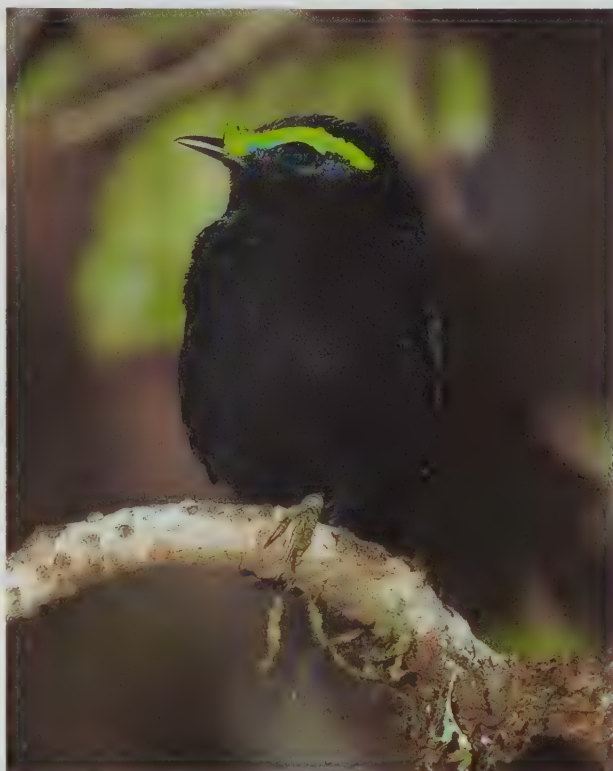
The long, decurved bill of the sunbird-asities led taxonomists to place these birds alongside the true sunbirds of the family Nectariniidae. Like that group, the species of *Neodrepanis* have two annual moults, the first of the year leading to an eclipse plumage in the male, and the second to breeding plumage. In the **Common Sunbird-acity** the two feather generations are similar on the breast and belly but the upperparts lose their iridescence in the non-breeding season. Breeding males of all species have distinctive blue or green wattles around the eye, the colour being produced by ordered arrays of collagen fibres; to date, this appears to be a mechanism for colour production unique in animals. This wattle is most prominent during the breeding season and the male can enlarge it when displaying to other individuals. During the non-breeding season it can be reduced to a narrow patch of pink skin, or lost entirely. This young **Common Sunbird-acity** (lower photo) is beginning to develop iridescence on the back and scapulars, and it shows a partly developed wattle around the eye. It is believed that the males of all four species show delayed plumage maturation.

[*Neodrepanis coruscans*, Marojejy National Park, Madagascar. Photos: Roland Seitre/Bios]



Unlike *Neodrepanis*, the genus *Philepitta* has only one moult a year, following breeding. In the **Velvet Asity**, the non-breeding coloration shows yellowish and buff fringes on most of the black feathers of the body and wing-coverts. These fringes are then worn away to show their black bases prior to courtship. The wattle in the male of this species reaches its maximum size when it is inflated during courtship display and the "horns" over the bill touch, but outside the breeding season it is almost completely absent.

[*Philepitta castanea*,  
Ranomafana National Park,  
Madagascar.  
Photos: Dominique Halleux/  
Bios]



Ampijoroa and Kirindy. Its easternmost limit in the Sambirano region is unknown, although it does not occur in lowland rainforest in the south of the Tsaratanana massif.

### General Habits

The two genera of asities have rather dissimilar habits. The two *Philepitta* species are the only real vegetarians of the Malagasy understorey, and their habits reflect this. Velvet Asities are often seen alone, feeding on the berries of understorey shrubs, especially those of the Rubiaceae or similar, reddish, rosehip-like fruits (see Food and Feeding), in the rainforest. They are often tame and approachable, flying only short distances when disturbed. When moving between fruiting or flowering trees, they often fly straight and fast through the understorey, out of sight. They also join mixed-species flocks, when they forage in the lower and middle storeys in a way similar to other members of such groups, and eat the occasional insect or spider. Velvet Asities sometimes feed in the canopy, up to 30 or 40 m above the ground, and they occasionally take nectar from ground-flowering plants, at which time they hop around on the forest floor with the tail cocked. Otherwise, they are, as other frugivores, rather sedentary birds, not moving much when replete, and often perching inconspicuously on slim understorey branches. They may be seen in small groups, especially in the June-September cool season, when participation in mixed-species flocks is more frequent. These parties may be family groups.

Schlegel's Asities are similar in behaviour to their congener, but they are more mobile, and are rarely seen sitting quietly in the understorey. They probably range rather more widely, owing to the lower density of potential foodplants in western dry forest. They probably feed more on nectar, too, especially during the latter part of the long western dry season, when there is very little other food available. Schlegel's Asity seems to be more of a canopy-top species than the Velvet Asity, although this may be an artefact resulting from the greater visibility in the lower canopy of its preferred habitat. It also forms small groups in the non-breeding season, and in Manongarivo it is sometimes present in mixed-species flocks at that time of the year, in June-August; this behaviour has not been remarked on elsewhere. In the central part of the west, males have been seen defending flowering trees during August, and solitary sightings are the rule except in

November-December, when males are singing; at such times, four or five males can be encountered within a few hectares.

The two sunbird-asities, as befits largely nectarivorous species, are much more active than are the frugivorous Velvet and Schlegel's Asities. They appear to be in constant motion, often perching on a branch for less than a second before buzzing away. They are also much more overtly aggressive, and will compete with, though usually lose to, true sunbirds such as the Souimanga Sunbird (*Nectarinia souimanga*) at Bakerella clumps. When faced with a human intruder, the male Yellow-bellied Sunbird-asity, in particular, is especially self-assertive: it flits around the head of the unwelcome guest, all the while calling and simultaneously displaying the prominent eye wattles, the luminous yellow throat and the brilliant blue back plumage. Human observers positioned in treetops seem to be a particular attraction for hostile reactions of this sort. Males often lean well forward on a branch, fluffing out the throat feathers and turning the head from side to side, while mobbing humans. Occasionally, an individual will spend a minute or so in calling from a single perch.

Both the asities and the sunbird-asities flick their wings, and in the case of the latter the regularity of the habit sometimes makes the bird look especially nervy. When excited, sunbird-asities also jerk the head back and forwards in an almost convulsive manner.

The two *Neodrepanis* species join mixed-species flocks, especially during the cool season, from June to September, during which period they can be seen to supplement their diet with small invertebrates (see Food and Feeding). During the warmer months, when both species feed predominantly on nectar (see Food and Feeding), they visit particularly prolific flower clumps in large numbers; 16 different individuals of the Common Sunbird-asity were collected from a single clump of flowering trees.

### Voice

The asities have rather feeble, squeaky calls. The most powerful vocalization is the song of Schlegel's Asity, given by males. It is a quiet but penetrating whistled run up and down the scale, and has a rather "rubbery" quality. This song is often delivered from the top of a canopy tree or from within vegetation, and males can be difficult to spot when singing.

Velvet Asities have less powerful calls which, owing to their squeaky character, are rather like the sounds produced by a child's





The **Common Sunbird-*asity*** shows a considerable degree of sexual dimorphism in plumage. The male is bright yellow beneath with iridescent blues and greens in the upperparts and an extensive wattle around the eye, whereas the female is a rather drab olive with only a hint of a greenish eyering. A similar degree of sexual dimorphism is shown in all four species and may be linked to a complex breeding system. *Neodrepanis* is more specialized than *Philepitta* in nectar feeding, and the long decurved bill is used for probing flowers with deep, curved nectar spurs of a range of species, though the genera *Bakerella* and *Impatiens* are particularly favoured. The sunbird-*asities* have a further adaptation for nectar feeding in that their tongues are tubular. Nevertheless, they will also take invertebrates, by probing beneath flaking bark and in dead hanging vegetation, as well as by sally-gleaning. It is thought that invertebrates may be most important during the cool season and as food for the young during the rainy season.

[*Neodrepanis coruscans*,  
Perinet, Madagascar.  
Photos: Alan Greensmith/  
Ardea]



**Velvet Asities** feed mainly on berries of understorey shrubs, with a particular predilection for those of the genus *Oncostemum*, which contain more fruit in relation to seed. The birds either feed alone or join mixed-species flocks as they move through the lower and middle storeys of the forest. The Velvet Asity is thought to be one of the principal seed dispersers for some plant genera since intact seeds have been found in their stomachs, while few other species feed on understorey fruits.

[*Philepitta castanea*,  
Marojejy National Park,  
Madagascar.

Photo: Roland Seitre/Bios]



toy teddy bear. This species seems not to have a clear song equivalent to that of Schlegel's Asity, but instead has two frequent calls. One of these is a more rhythmic, repeated "whee-doo", strongly emphasized on the first syllable, and the other a long series of simple "weet" notes, often produced by lekking males (see Breeding). In addition, similar noises may be heard from foraging birds or from adults tending young.

The vocalizations of the sunbird-asities are even squeakier. The Common Sunbird-asity produces a very rapidly repeated series of hisses, very characteristic and penetrating, containing about 10-15 notes, which may grade into a more widely spaced series of similar notes. Single quiet, squeaking notes are sometimes also given when near the nest. The calls of the Yellow-bellied Sunbird-asity are much weaker, and could be mistaken for the sounds made by a tree-frog. Often, they consist of a single note, or of one note repeated at intervals of one second or longer. At times they come out at a faster rate, then amounting to a weak imitation of the call of this species' congener.

Both of the sunbird-asities produce a trilled whistle, or buzzing, in flight which appears to be caused by the relatively long and emarginated first primary (see Morphological Aspects). This feather is longer and more emarginated on males than on females, and more so in the Yellow-bellied than in the Common Sunbird-asity. It is difficult to say whether the strength of the noise produced bears any relation to these differences, although one or two observations have suggested that this may be the case. Velvet Asity males have also been reported to produce a whirring noise in flight, and a mechanical noise heard during displays may also be made by the wings.

### Food and Feeding

The *Philepitta* asities are largely frugivorous. They have been recorded eating a range of fruits, mostly reddish or orange in colour, and around 5-10 mm in diameter, which are found growing on understorey shrubs. In the case of the Velvet Asity, the most important families in this respect are Rubiaceae, Euphorbiaceae, Piperaceae and Melastomataceae. The genera include *Psychotria*, *Jasminum*, *Macaranga*, *Pittosporum*, *Chassalia* and *Oncostemum*. For at least some of these taxa, Velvet Asities are probably the principal seed-dispersers; intact seeds have been found in the stomachs of specimens, and very few other bird species in Madagascar consume understorey fruits.

The asities pick the fruits directly, while perched, or they consume them after a brief hover during which the food is detached from the parent plant in a short lunge. The larger fruits may require considerable effort to swallow.

Schlegel's Asity is less well studied. One of the few fruits which it has been noted to consume is that of a species of *Cabucala*, a member of the shrub family Apocynaceae.

During periods when fruit is abundant, Velvet Asities concentrate on *Oncostemum*, which contains more fruit in relation to seed than do other genera. When fruits of this species are in short supply, however, both Velvet and Schlegel's Asities are frequently seen feeding on other fruits, as well as on insects and at nectar-bearing flowers. For the latter, the bird's long, bifid, feather-ended tongue (see Morphological Aspects) presumably aids the collection of nectar. Most flowers thus visited are red, reddish or whitish, and those exploited by Schlegel's Asities include *Combretum*, *Albizia* and exotic *Eucalyptus*. Both the Common Sunbird-asity and the Velvet Asity have been observed feeding on the nectar of *Bakerella*, and also on a strange subterranean root parasite, probably a species of the balanophoraceous genus *Ditepalanthus*, the flowers of which open at ground level.

Velvet Asities sometimes sally-glean and flycatch for insects and other small invertebrates. This foraging method is probably practised mostly in the cool season of June-September, when fruits and flowers are at their least abundant. Furthermore, at this time of year, individuals have been observed as they ate large web-building spiders, probably of the genus *Nephila*, which had legspans of about 8 cm.

The sunbird-asities are more specialized on nectar than are the two *Philepitta* species. In November-December, they are often easy to see as they feed on the flowers of mistletoes, especially of the genus *Bakerella*, which have long, recurved nectar-bearing spurs that appear to match well the bill shape of the two *Neodrepanis* species. As mentioned above (see Morphological Aspects), however, some observations suggest that the sunbird-asities do not, in fact, insert the bill very far into these flowers, preferring instead to use the long tongue.

Other plants utilized by the sunbird-asities include *Impatiens humblotiana* of the Balsaminaceae, which is sometimes visited by considerable numbers of these birds over the course of several days, as well as *Hedychium* and *Aframomum* of the Zingiberaceae, many species of Melastomataceae, such as *Gravesia* and *Medinilla*, and equally many of Rubiaceae, including *Psychotria*, *Mussaenda* and *Gaertnera*. Even some orchids



(*Liparis*) may be used. Many of these plants have red or pink flowers.

As with the *Philepitta* asities, both species of *Neodrepanis* take insects and other invertebrates at times, probably mainly during the June–September cool season, but also as food for their young in the warm rainy season. They seek insects and spiders under flaky bark or in hanging dead vegetation, when they probe crevices and lift off small pieces of vegetation with the bill. Adults also catch small aerial insects during the warm months, possibly to feed to their young. The Yellow-bellied Sunbird-asity has been seen catching tiny flies from low bruselaceous shrubs on mountain summits, and both it and the Common Sunbird-asity will sally-glean and sally for insects when members of mixed-species flocks.

## Breeding

The Malagasy rainy season commences in November–December and ends in about April–May. This coincides broadly with the period when young birds of many species are being fed by their parents, as insects tend to be most abundant at this time. The Philepittidae also follow this pattern, with some latitudinal variation. The three rainforest species start displaying and building nests from September to November. In the northern half of the eastern rainforest, male Velvet Asities lose the friable yellow tips of their body and wing feathers often by the beginning of August, almost all of them becoming completely black by the end of September. There are records of nests with eggs in the far north on 29th August, and a fledged juvenile has been recorded from as early as 27th September, although the more normal period for fledging seems to be early October to late November. In the southern part of the species' range, nest-construction generally starts in November and December, with fledging in January–February. The timing of changes in body plumage and the initiation of breeding may also be extremely variable according to climate; the processes can be delayed by abnormally dry weather in September and October.

Information on the breeding of Schlegel's Asity and the two sunbird-asities is much more scant. The former constructs its nests between October and December. Nest dates for sunbird-asities seem to be almost as widespread temporally as are those for the Velvet Asity, with sexually active male Common Sunbird-asities collected in August and nest-building recorded in the same month, but other nests under construction during the period from then until January. The only two known nests of the Yellow-bellied Sunbird-asity were found in October and November, while recently fledged juveniles of that species have been seen in mid-November and early December, which ties in with the observation of displays in September.

All four species in the family Philepittidae seem likely to have complex and interesting breeding systems, if the strong sexual dichromatism and breeding-plumage ornaments of the males are anything to go by. The only species which has been studied in detail is the Velvet Asity, which evidently has a polygynous breeding system. The males hold small territories close to one another, these territories appearing to be display areas, rather than having any useful resources, such as food or nesting sites, contained within them. Males compete among themselves in these dispersed leks, calling and displaying in a series of ritualized manoeuvres, in order to attract the attention of females. On their territories, male Velvet Asities perform six kinds of display element. The main ones are an erect posture, in which the bird leans forward slightly over its perch, extending its neck and inflating its green and blue caruncle; a wing-flap display, whereby the male holds its wings extended horizontally, displaying the bright yellow alular spot; the horizontal posture, associated with hearing the calling of another, adjacent male; the open-gape display, whereby the bright yellow gape is shown off; and the hanging-gape display, in which the male leans all the way forward over its perch and opens the bill. In some cases, when the male asity is extremely excited, he will perform a complete perch-somersault manoeuvre, completing a turn around the branch and ending up in a "normal" posture. It appears that the horizontal, open-gape and hanging-gape displays are used be-



The songs of the all asities are generally weak and squeaky. Those of **Schlegel's Asity** are the strongest of the family, being a series of whistles running up and down the scale. The song is commonly given from the top of a tall tree or from within undergrowth. Little is known of the courtship of this species, but during one observation the male produced a series of soft squeaks, while fluffing out his breast feathers, drooping his wings, and raising his tail almost till it touched his back.

[*Philepitta schlegeli*, Ampijoroa, Madagascar. Photo: Simon Harrap]

tween males, while the erect posture and the wing-flap display are directed at females.

Displays recorded for Schlegel's Asity, while poorly documented, are rather different. In one observation, a male displayed to a female by drooping his wings and fluffing up his breast feathers, and gradually raising his tail until it almost touched the back, this sequence being accompanied by a series of quiet squeaks. There seems to be no parallel to this display in the repertoire of the Velvet Asity.

The displays of the sunbird-asities are almost as poorly known as are those of Schlegel's Asity. Indeed, the breeding of the Common Sunbird-asity remains almost completely unknown, this possibly being due to the fact that the species' nest is often located high in the subcanopy and is thus difficult to observe. At least one display of the Yellow-bellied Sunbird-asity resembles the perch-somersault of the Velvet Asity, in which the bird flips right around the perch. In the case of the sunbird-asity, however, the male begins by leaning well forward on the perch, with its chin feathers fluffed, and the caruncles and blue upperparts displayed by head-turning. As with the Velvet Asity, this display is usually directed towards other males or at intruders, such as humans. During brief observations of reactions between individuals, this display was given by a full-plumaged male, while a nearby female-plumaged bird, possibly an immature male, flapped its wings vigorously while making a twittering call; these and other individuals were then seen to chase one another around. These displays seem to be intrasexual. The only intersexual display recorded for the sunbird-asities is one in which the male gave what is termed a hunch-display, pulling his head back and lowering the bill, so that it touched the breast, while erecting the crown feathers and depressing the tail. During this display the male called vigorously, and the female touched the male's back with her bill and fluttered her wings slightly. In addition, wing-flapping is given at times by fully male-plumaged Yellow-bellied Sunbird-asities.

Surprisingly, nothing appears yet to have been published about the displays of the Common Sunbird-asity, even though it is a more numerous species.

As mentioned above, various aspects of the breeding systems and breeding behaviour of the Philepittidae have been studied in any real detail only for the Velvet Asity, and the results from investigations of this species are still preliminary. It seems likely that the Velvet Asity exhibits polygyny, with the males mating with more than one female. The polygynous breeding strategy is often found among species which feed on fruit or nectar,



The philepittid nest is thought to be constructed entirely by the female.

It is a messily woven, spherical or pear-shaped structure consisting of bamboo and root fibres suspended by filaments of grasses, bamboo or moss from the low branches of shrubs; it is generally rather similar to that of the broadbills (Eurylaimidae), to which the asities are closely related. In the **Velvet Asity**, the nest has a high proportion of moss, or indeed it can be made entirely of moss. At least two of the species create the entrance hole by poking the bill through the wall of the structure, a trait apparently unique in birds.

The hole is neatly sheltered by an overhanging porch-like structure. Nest-building takes place during November or December, coinciding with the start of the rainy season and also with the greater abundance of invertebrates, on which the young are largely fed. Male Velvet Asities are polygynous, and the female is left to raise the young alone. However, even for such a relatively well-studied member of the family, much still remains to be learnt about the breeding system employed.

[*Philepitta castanea*,  
Ranomafana National Park,  
Madagascar.  
Photo: Dominique Halleux/  
Bios]





as there may be sufficient food available for the female to bring up young on her own, thereby releasing males from the task of caring for young. Other life-history characteristics that are often linked to polygyny include delayed plumage maturation in the male; strong sexual dichromatism, including conspicuous and expensive breeding ornaments acquired by the male; lekking behaviour; and a reduced male contribution to nest-building, brooding and the care of the young. All these traits are clearly shown by Velvet Asities, while the sexual dichromatism, at least, is well marked in the other philepittid species, too.

In the case of Velvet Asities, mate selection seems to take place through males displaying in small territories that are clumped together in dispersed leks. The males call, display and show off their breeding ornaments, as described above. Females move around the area of the dispersed lek, and presumably evaluate each male according to its performance. Nest-building and incubation seem to be the responsibility of the female alone. There have been observations of more than one female-plumaged individual at a nest under construction; these apparently relate to young, female-plumaged males which harass the adult females.

Evidence from the other members of the family is more sparse. The male Schlegel's Asity accompanies the female while she is collecting nest material, and he may contribute to nest-building. The fact that several male Schlegel's Asities will sing from within a restricted area could mean that this species, too, does have dispersed leks. In addition, it may show delayed plumage maturation in males. This is indicated by the fact that, during the breeding season, males can be seen in a variety of incomplete plumages, including female-plumaged individuals with large wattles, and male-plumaged birds with the wattles either small or even lacking.

The limited information available for the sunbird-asities suggests something similar. There are certainly many examples of males of both species, in the breeding season, being equipped with incomplete breeding plumage or small wattles, and, while the sunbird-asities have no clearly defined song, they appear to use variants of their calls in social situations that could be interpreted as leks. Furthermore, only females have been recorded as constructing nests and brooding young; males collected in the breeding season all lacked brood patches. Male sunbird-asities of both species have been seen near nests under construction, and also visiting nests to feed the chicks, and male Yellow-bellied Sunbird-asities have been watched as they fed recently fledged young. In addition, males of the latter species have been observed perched near nests when females visited to feed the young, sometimes also displaying as this happened.

The sum of these observations suggests that, for all species in the family, polygyny is at least a possibility. Nevertheless, it seems likely that breeding strategies are flexible, following resource availability.

All species in the family Philepittidae construct a fairly elaborate hanging spherical or pear-shaped nest, very much in the manner of the broadbills, with suspensory filaments made out of grass, bamboo or moss, and with an entrance hole surmounted by an overhanging "porch". At least two of the four species, the Velvet Asity and the Common Sunbird-asity, make the entrance hole by poking the bill through the wall of the nest. This is the only avian family known to create the entrance hole in such a manner, instead of weaving it into the fabric of the nest.

At Ranomafana National Park, Velvet Asity nests were almost always suspended from the lowest branches of *Tambourissa obovata* trees, between 2 m and 5 m from the ground, and often over small brooks or clearings. Many nests are built entirely of moss, or with bamboo leaves as lining; some have lichenous, palm or root fibres woven into the moss, these sometimes forming a dangling tail below the nest. Nests of Schlegel's Asity are rather similar, except that, since there is little moss in the west of Madagascar, the birds supplement this with strips of bark and dead leaves, held together with spiders' webs.

The nests of the sunbird-asities are less well known, but they appear not to be very different from those of *Philepitta*. The Common Sunbird-asity is recorded as using green, drying moss and bamboo leaves, along with a few twigs and leaflets, and the nest is built at about 5 m from the ground. Yellow-bellied Sunbird-asity nests are likewise constructed of moss with bamboo lining, and

are placed 2-3 m from the ground. One such nest lacked the "porch" feature noted on other nests, but this may have been incomplete.

Almost nothing is known of the breeding biology of the Philepittidae. Clutch size is poorly documented. The Velvet Asity is reported as laying three eggs, and two eggs were present in each nest of the Common and Yellow-bellied Sunbird-asities in which eggs were found. No details are available on the length of either the incubation period or the fledging period.

## Movements

None of the members of the Philepittidae is known to undertake movements of any significance. It is possible that the Yellow-bellied Sunbird-asity makes slight altitudinal movements, responding to a decrease in abundance of food at higher altitudes during the cold, wet season of May-July or a corresponding increase in resources at lower altitudes during the same season. There are, however, very few observations of this species during that period of the year.

A more intriguing possibility is that the Common Sunbird-asity performs quite long-distance seasonal movements. This is suggested by the presence of two males at Ambohitantely Special Reserve, about 150 km from the nearest block of primary eastern rainforest, during the wet season in February 1995. The species had never before been recorded at this site, despite the fact that Ambohitantely had been the subject of fairly extensive research on its bird community. On the other hand, it is also possible that these records relate to a relict population that had not previously been detected at the site.

## Relationship with Man

All philepittids are obligate forest-dwellers, aside from making short sorties to fruiting or flowering trees a few hundred metres from the forest. This makes them vulnerable to human activity, as they depend on the existence of forest that covers land that is also needed by local people for agriculture. Apart from their extreme attractiveness, behavioural quirks and taxonomic oddity, which make them a very popular target for visiting birdwatchers and researchers, this is about the extent of their interaction with humans.

People living around the forest know these species, and local names are fairly constant between regions, suggesting that there



Although fairly common, **Schlegel's Asity** has a highly fragmented range. It is found in lowland seasonally dryforest, where it appears to be restricted to the more humid valley bottoms, deciduous forest and lowland transitional forest. These forest habitats are fast disappearing in Madagascar as a result of shifting agriculture, increased burning, and exploitation for fuel and timber for construction. However, the species is found in its greatest numbers in inaccessible ravines in calcareous karst massifs, giving it a reasonable degree of security for the present.

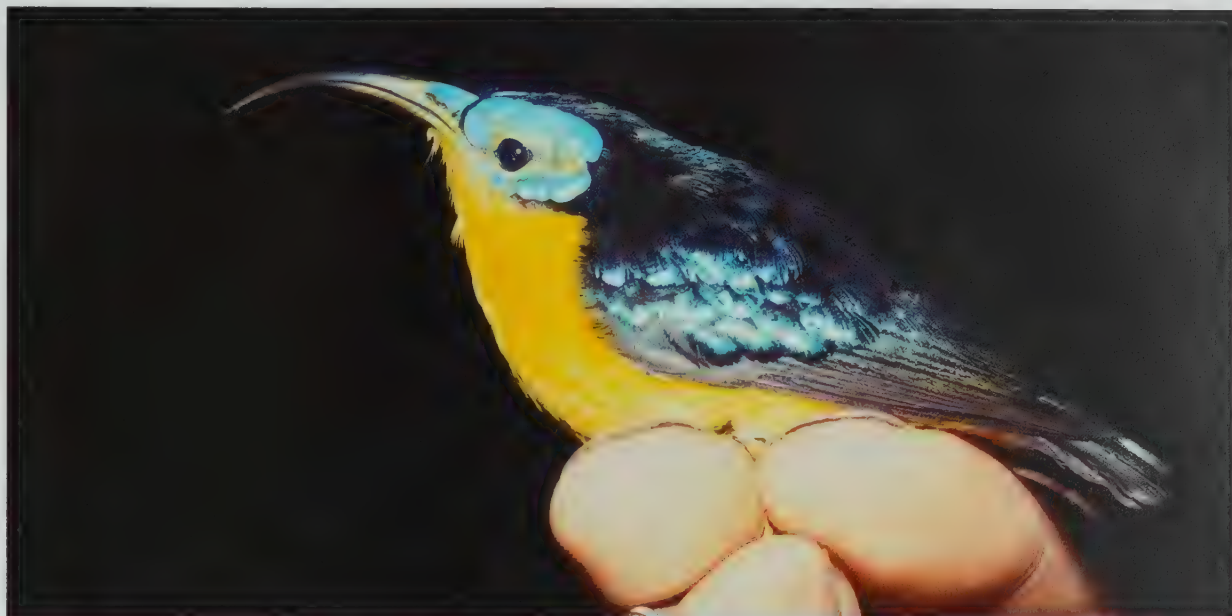
[*Philepitta schlegeli*, Ampijoroa, Madagascar. Photo: Simon Harrap]



Listed as Endangered in 1994 because of its limited altitudinal range, strict habitat requirements, and low population, the **Yellow-bellied Sunbird-asy** has now been found to be more widespread and numerous. At some high-altitude sites it has even been found to be relatively common. However, these forests, although largely free from the pressures of agricultural encroachment due to their remote location and unproductive soils, are highly fragmented and fire-prone.

[*Neodrepanis hypoxantha*, Andohahela National Park, Madagascar.

Photo: Frank Hawkins]



is some common knowledge of the species. This is particularly so in the case of the Velvet Asity, which is referred to as the "Asity", pronounced as "ahseetee". Information about local knowledge of the sunbird-asities and Schlegel's Asity is more difficult to come by, as the species are often difficult to see, or occur in inaccessible habitats. The sunbird-asities are often confused with the sunbirds proper, the Nectariniidae, and go under the local name of "soy", which is pronounced as "sooe".

All four philepittid species probably play an important role in forest regeneration. In this respect, the *Philepitta* asities in particular are likely to be significant dispersers of seeds, especially those of understorey shrubs, while the sunbird-asities assist in pollination. It is quite probable that the latter are responsible for a very limited amount of pollination of commercially important plant species, for instance of *Grevillea* and *Albizia* or *Eucalyptus* species growing near the forest edge.

### Status and Conservation

The Velvet Asity and the Common Sunbird-asy are both fairly common and widespread over the length of the eastern rainforest block, and, while the latter habitat is under considerable human pressure, neither species should be considered threatened. They are both probably most common in the mid-altitude rainforest belt, between 800 m and 1200 m, which is also the zone with the greatest amount of forest remaining. The Velvet Asity was noted more frequently at 1220 m and 1550 m than at 875 m in Anjanaharibe-sud Special Reserve, but was netted in approximately equal numbers at 720 m, 810 m, 1210 m and 1625 m in Andringitra National Park, and at 810 m, 1200 m and 1500 m in Andohahela National Park. It was uncommon at 400 m altitude. Common Sunbird-asities are fairly numerous in most mid-altitude forests; in the 1990s, densities in Anjanaharibe-sud Special Reserve, at 1260 m, were estimated at between 852 and 1167 individuals per square kilometre, although these figures are probably considerable overestimates, resulting from the species' habit of approaching the observer closely.

Of the two remaining species in the family, one is currently considered to be threatened and the other is Near-threatened. In 1994, the Yellow-bellied Sunbird-asy was classed as Endangered by N. J. Collar and co-workers in the official BirdLife International list, this consideration being based on the species' limited altitudinal range, apparent low population density and restricted habitat requirements. Since then, it has been shown to be much more widespread than was previously believed, and even very common in some high-altitude sites above 1200-1400 m. At Andringitra National Park, contact frequency was around 0.63 individuals per point-count site, a figure which did not differ sig-

nificantly from those for the Common Sunbird-asy at lower elevations, while densities at Anjanaharibe-sud Special Reserve were estimated at between 1900 and 6500 individuals per square kilometre; these figures, however, as those for the Common Sunbird-asy, are almost certainly gross overestimates of the true numbers. Notwithstanding the fact that the Yellow-bellied Sunbird-asy does appear to be more numerous than was formerly supposed, its conservation status remains that of Endangered. This is because it has a very small range, and one in which its forest habitat is both highly fragmented and diminishing in quality. Its current global population has been estimated very approximately at perhaps 10,000 mature adults.

The major threat to the Yellow-bellied Sunbird-asy is habitat loss resulting from uncontrolled bush fires and from agricultural encroachment. These pressures are much less marked in montane forest than in the lowlands, as montane forest grows on very unproductive soils in a relatively harsh climate. These high-lying forests do, however, burn easily and are vulnerable to fire in particularly dry years, which seem to have been especially severe in recent periods. Nevertheless, there has been no clear recent instance of any Yellow-bellied Sunbird-asy habitat being destroyed by uncontrolled bush fires. Furthermore, the species' presence in at least ten protected areas should aid its future survival.

Schlegel's Asity is considered Near-threatened owing to its very fragmented distribution and its presence in highly threatened habitats such as western Malagasy deciduous forest and lowland transitional rainforest. These two habitats are being very rapidly reduced in surface area, mostly for the purposes of shifting cultivation, the consequences of which further diminish the size and quality of the habitats. In addition, not only are dry forests within this species' range subject to burning and cattle grazing, but their timber is also exploited by local people for fuel and for use as construction material. Conservation activities aimed at reducing these pressures are under way, but the social issues, particularly lack of land tenure, increased immigration, and the use of fire as a means of protest, are immense and very difficult to manage. Fortunately for Schlegel's Asity, it is found at its highest levels of abundance in naturally protected forests, in ravines in calcareous karst massifs.

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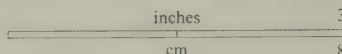


PLATE 3

Family PHILEPITTIDAE (ASITIES)  
SPECIES ACCOUNTS

Genus *PHILEPITTA* I. Geoffroy Saint-Hilaire, 1838

1. Velvet Asity

*Philepitta castanea*

French: Philépitte veloutée German: Seidenjala Spanish: Filepita Aterciopelada

**Taxonomy.** *Turdus castaneus* Statius Müller, 1776, Madagascar. Monotypic.  
**Distribution.** Rainforest belt in E Madagascar, from Manongarivo and Tsaratanana S to Andohahela.

**Descriptive notes.** 14-16.5 cm. Plump, rounded, almost tailless, with short, slightly decurved bill, short legs. Adult male breeding plumage, acquired through loss of yellow tips of body and wing-covert feathers, is black except for a yellow patch on marginal underwing-coverts and on alula, sometimes a few yellow fringes on head; wing and tail feathers usually dark brown; a large, bright pale green supra-orbital wattle, extending into a horn over base of bill, wattle with a narrow blue line over eye; eyes dark brown; bill black, gape yellow or grey; legs and feet dull greenish-olive. Non-breeding adult male has most feathers (especially wing-coverts, breast and belly feathers) tipped yellow; vestigial wattle, dull flesh in colour. Adult female has dark olive-green upperparts, a few paler feathers over ear-coverts; ear-coverts darker olive-green, marked with a pale creamy stripe originating at base of bill; moustachial stripe similar to ear-coverts in coloration; tail and wings brown with olive tinge, wing feathers fringed yellow-green; below, pale yellow-green or off-white, streaked darker olive, belly and vent clearer yellowish-green with streaks less conspicuous; eyes dark brown, bare circumorbital skin dull olive; bill black, narrow yellowish or pink gape-line, dull yellow gape; legs and feet olive. Juvenile is very similar to adult female; subadult male shows varying amounts of black plumage, acquired during 2nd calendar-year. Voice: Weak squeaky calls; rhythmic, repeated "whee-doo", first syllable strongly stressed; also long series of "weeet" notes, often by lekking males.

**Habitat.** Primary rainforest, adjacent degraded and secondary rainforest, and forest edge; visits flowering or fruiting trees, e.g. stands of guava (*Psidium cattleianum*), close to forest edge or in adjacent second growth. Often in areas of open understorey in valley sides and bottoms. Recorded

at low and middle altitudes; probably most common between 600 m and 1400 m, scarce below 400 m and above 1600 m, and absent from montane sclerophyllous forest.

**Food and Feeding.** Mostly frugivorous; eats small (c. 5-10 mm diameter) red or orange fruits of understorey shrubs; most important families are Rubiaceae, Euphorbiaceae, Piperaceae and Melastomataceae, and plant genera include especially *Oncostemum*, also *Psychotria*, *Jasminum*, *Macaranga*, *Pittosporum*, *Chassalia*. Seasonally, also takes nectar from terrestrial and shrub-layer species, e.g. *Bakerella*. Arthropods taken occasionally. Forages in canopy and down to lower levels; hops on forest floor. Fruits picked directly from perch, or plucked during brief hover. Joins mixed-species flocks, mostly in Jun-Sept.

**Breeding.** Laying in Sept-Dec; from end Aug in N. Apparently polygynous. Dispersed leks in which each male has small, non-resource-based territory; erect posture and wing-flap display directed at females, with horizontal, open-gape and hanging-gape displays and flipping around perch used between males. Nest built by female, an elongated sphere made of moss and bamboo, entrance hole adorned with a "porch", suspended from lowermost branches of low tree (very often *Tambourissa*) at 2-5 m, often over a stream or path. Clutch 3 eggs; male takes little or no part in incubation or care of young.

**Movements.** None known.

**Status and Conservation.** Not globally threatened. Fairly common in most remaining E rainforest blocks, and not immediately threatened. Also capable of tolerating some habitat degradation. Probably a principal agent in dispersal of seeds of understorey shrubs. Occurs in all protected areas within its range, e.g. Ranomafana, Andringitra and Andohahela National Parks, Anjanaharibe-sud Special Reserve, and Perinet Special Reserve.

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2. Schlegel's Asity

*Philepitta schlegeli*

French: Philépitte de Schlegel German: Gelbbauchjala Spanish: Filepita de Schlegel

**Taxonomy.** *Philepitta schlegeli* Schlegel, 1867, Madagascar. Monotypic.

**Distribution.** N, NW & W Madagascar, from Andavakoera in N, S to c. 70 km N of Morondava in W.

**Descriptive notes.** 12.5-14 cm. Small, round, short-tailed, with short bill and legs. Adult male breeding has head mostly black, brilliant apple-green wattle extending in front, below and in two lobes





behind eye, wattle with cobalt-blue band passing through eye and on to lower lobe; upper mantle and underparts brilliant yellow, back olive-green; wings and tail duller, browner, with pale olive fringes; eyes dark brown; bill blackish, gape orange-yellow, sometimes also a narrow yellow gape-line; legs and feet slate-grey. Male non-breeding plumage olive-green above, variable amounts of creamy streaking on crown, nape and ear-coverts, and on collar, usually some black on lores, crown or ear-coverts; wings and tail brownish, variable olive-green fringes on outer webs, brighter yellow area on bend of wing; dull yellow on throat, mottled darker on breast and upper belly, brighter clear yellow on undertail-coverts and vent, bare parts as breeding, but with dull fleshy yellow orbital ring, no yellow gape-line. Female is very similar to non-breeding male, but lacks black on head. Subadult or moulting male often has intermediate plumage between female and breeding male; can have entirely female-like plumage and large, fully formed wattle, or have no wattle and yet be similar in plumage to breeding male. Voice. Male song a quiet but penetrating whistle of c. 7-9 notes, rising and then falling; quiet squeaks in display.

**Habitat.** Lowland seasonally dry rainforest, W deciduous forest and karst canyon forest; locally also in W dry forest, usually adjacent to more humid or sheltered areas. Sea-level to 800 m.

**Food and Feeding.** Largely frugivorous, especially in rainy season; fruits include those of *Cabucala* (Apocynaceae). Probably increasingly nectarivorous and insectivorous in late dry season, when fruits are scarce; visits mostly red, reddish or whitish flowers, including *Combretum*, *Albizia* and exotic *Eucalyptus*. Often forages in canopy, sometimes descending to understorey. Usually singly; also in small groups in non-breeding season, in Jun-Aug, when sometimes joins mixed-species flocks.

**Breeding.** Little known. Nest-building in Oct-Dec. Probably polygynous; breeding strategy possibly variable in response to resource availability. Possibly dispersed male leks; male display with drooping wings, fluffing of breast feathers and tail-cocking recorded. Globular nest with entrance "porch" built by female, possibly assisted by male, constructed of moss with bark or leaf strips, held together with spiders' webs, suspended from low branch of understorey tree. Clutch size not documented; no other information.

**Movements.** None known.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in West Malagasy Dry Forests EBA and East Malagasy Wet Forests EBA. Rather scarce in most areas. Commonest in moist and transitional forests of Sambirano region of NW, and especially in karst canyons in W, e.g. Namoroka and Bemaraha, where forest habitat is naturally protected; only local in W dry forests, mainly in limestone areas. In Sambirano, gold-mining has destroyed certain areas of moist forest and also resulted in increased immigration into region, leading to further clearance of forest for subsistence farming. Dry-forest habitats within species' range have suffered severe deterioration through burning and cattle grazing, as well as from utilization of wood for fuel and building materials. Very patchy distribution over much of its range, making any genetically significant contact between populations very unlikely.

**Bibliography.** Appert (1996), Benson *et al.* (1976-1977), Dee (1986), Delacour (1930a, 1932a), Dowsett & Dowsett-Lemaire (1993), Dowsett & Forbes-Watson (1993), Fishpool & Evans (2001), Goodman & Andrianarimisa (1995), Goodman *et al.* (1996), Hawkins (1994), Langrand (1995), Milne-Edwards & Grandidier (1875, 1885), Milton (1951), Milton *et al.* (1973), Morris & Hawkins (1998), Rakotonomenjanahary & Hawkins (2000), Rand (1936), Robertson (1995), Sinclair & Langrand (1998), Stattersfield & Capper (2000), Tingay & Gilbert (1999), Yamagishi *et al.* (1997), Young (1995).

## Genus *NEODREPANIS* Sharpe, 1875

### 3. Common Sunbird-asyity

#### *Neodrepanis coruscans*

**French:** Philépitte souimanga

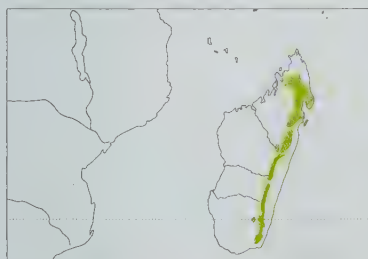
**Spanish:** Filepita-suimanga Común

**German:** Langschnabel-Nektarjale

**Other common names:** Sunbird Asity, Wattled Sunbird-asyity, Wattled Asity/Sunbird, (Wattled) False Sunbird

**Taxonomy.** *Neodrepanis coruscans* Sharpe, 1875, Madagascar. Monotypic.

**Distribution.** E Madagascar, from at least Tsaratanana in N, S to Andohahela.



**Descriptive notes.** 9.5-10.5 cm. Tiny, short-tailed, with remarkably long and decurved bill, short legs. Adult male breeding has bright blue head with large, mostly sky-blue wattle around eye, orbital ring green, and a bright green line extending from the wattle along base of bill below nostrils, bright blue above nostrils; upperparts dark blue, iridescent blue fringes on feathers of back, inner wing-coverts and rump; primaries narrowly fringed yellow; underparts dull yellow with olive wash or streaking; eyes brown; bill blackish; legs and feet dark brown. Non-breeding male is olive-green on head and back (often some iridescent blue

feathers on rump), often with vestigial bright blue eye wattle; darker tertiaries and wing feathers edged paler green; underparts dull yellow, streaked olive, somewhat brighter yellow on flanks; bare parts as breeding male. Female similar to non-breeding male, but lacks vestigial wattle and blue rump feathering, and even duller below, brightest on flanks, suffused with olive on breast. Juvenile has slight pale fringes on wing-coverts, initially has pale pink base of bill. Voice. Single quiet, squeaking notes; also very rapidly repeated series of hisses, c. 10-15 notes, sometimes grading into more widely spaced series.

**Habitat.** Canopy and subcanopy of primary mid-elevation and lower montane rainforest. Sea-level to c. 1500 m, locally to 1800 m; scarce or often absent below 400 m.

**Food and Feeding.** Mostly nectar, from a wide range of pink, red and white flowers, including *Bakerella*, *Impatiens humboldtiana*, *Hedychium* and *Aframomum*, many species of Melastomataceae (e.g. *Gravesia*, *Medinilla*) and many of Rubiaceae (e.g. *Psychotria*, *Mussaenda*, *Gaertnera*); some orchids (*Liparis*) may be exploited. Also insects, either caught in aerial sallies or removed from dead leaf clumps or from crevices. Joins mixed-species flocks, especially during Jun-Sept.

**Breeding.** Little known. Nest-building recorded in Aug-Jan. Possibly polygynous. Displays not documented. Female builds suspended ovoid nest with entrance "porch", made of moss, leaf strips and few twigs, c. 5 m from ground in subcanopy. Clutch 2 eggs; chicks fed by both sexes.

**Movements.** Unclear; some evidence of seasonal presence in high-plateau forests at Ambositantely. Otherwise, seems present at most sites throughout year, although short movements in relation to nectar abundance could be expected.

**Status and Conservation.** Not globally threatened. Fairly common and widespread. Although restricted to primary forest at middle and lower montane levels, this habitat is the most abundant natural formation in Madagascar. Occurs in several protected areas, e.g. Ranomafana National Park, Anjanaharibe-sud Special Reserve, and Marojejy Strict Nature Reserve.

**Bibliography.** Andrianarimisa (1995), Benson *et al.* (1976-1977), Dee (1986), Delacour (1932a), Dowsett & Dowsett-Lemaire (1993), Dowsett & Forbes-Watson (1993), Fishpool & Evans (2001), Goodman *et al.* (1997), Hartlaub (1877), Hawkins *et al.* (1997), Langrand (1995), Milne-Edwards & Grandidier (1875, 1885), Milton *et al.* (1973), Morris & Hawkins (1998), Rakotonomenjanahary & Hawkins (2000), Safford & Duckworth (1990), Salomonsen (1934, 1965), Salvan (1972), Sinclair & Langrand (1998), Thorstrom & Watson (1997), Yamagishi *et al.* (1997).

### 4. Yellow-bellied Sunbird-asyity

#### *Neodrepanis hypoxantha*

**French:** Philépitte de Salomonsen

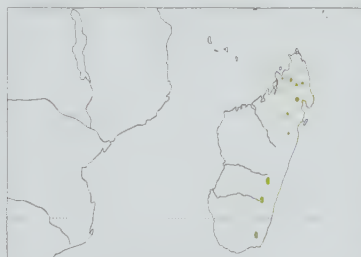
**Spanish:** Filepita-suimanga Ventrigualda

**German:** Kurzschnabel-Nektarjale

**Other common names:** Yellow-bellied Asity, Small-billed Asity/False Sunbird

**Taxonomy.** *Neodrepanis hypoxantha* Salomonsen, 1933, east of Antananarivo, eastern Madagascar. Monotypic.

**Distribution.** Patchily along rainforest belt of E Madagascar.



**Descriptive notes.** 9-10 cm. Tiny, short-tailed, with long, decurved bill, short legs. Breeding male has black crown, neck, mantle, scapulars, wing-coverts, tertiaries and rump, all widely edged iridescent royal blue; black wing feathers and tail; bright yellow underparts; very large, carunculated wattle around eye, lime-green towards centre, mid-blue around edge; wattle extends forward nearly to bill, and a mid-green line extends along base of bill to nostril, blue above nostril; eyes brown; bill blackish; legs and feet dark brown. Non-breeding male has olive-green from crown to rump, a few iridescent blue feathers, especially on rump, narrow paler olive

tertiary fringes; wing feathers and tail darker olive-brown; vivid deep yellow underparts, brightest on throat and breast, slightly washed olive on flanks and towards vent; a vestigial blue eye wattle, often just a blue spot behind or over eye. Female similar to non-breeding male, but lacks iridescent feathering and vestigial wattle. Juvenile resembles female; after post-juvenile moult, has paler fringes on greater and median wing-coverts, and duller yellow breast and belly. Voice. Single squeaky note, sometimes repeated at intervals of 1 second or more, occasionally faster.

**Habitat.** Canopy and subcanopy of montane rainforest; areas with shrubby vegetation preferred. Occurs from c. 1100 m, mostly from 1400 m, to upper limit of arborescent vegetation, locally to 2650 m. Becomes more common at transition from mid-altitude forest to moss forest.

**Food and Feeding.** Mostly nectar, taken from wide variety of plant genera; feeds chiefly from pink, white and red flowers, especially parasitic ones, including *Bakerella*, also *Impatiens humboldtiana*, *Hedychium*, *Aframomum*, Melastomataceae (e.g. *Gravesia*, *Medinilla*), Rubiaceae (e.g. *Psychotria*, *Mussaenda*, *Gaertnera*). Also some insects, caught by sallies from tops of low shrubs, or taken from dead leaf clumps or under loose bark. Moves very actively in canopy and subcanopy. Sometimes joins mixed-species flocks, especially during Jun-Sept.

**Breeding.** Nesting observed in Nov-Jan. Probably polygynous. Displays by male include hunch-display with head retracted, bill lowered to touch breast, crown feathers erected and tail depressed, also wing-flapping, also flipping around perch. Female builds suspended ovoid nest with entrance "porch", largely of moss and leaf strips, 2-3 m from ground in the mid-storey. Clutch 2 eggs; chicks fed by both sexes.

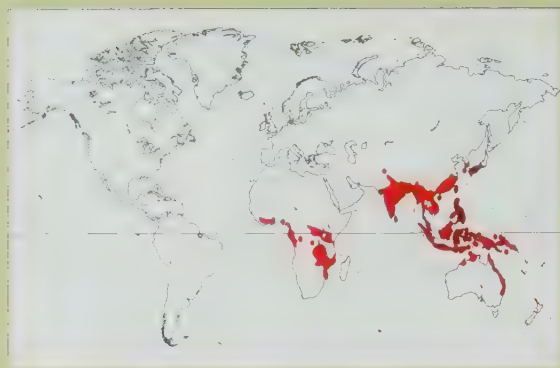
**Movements.** Possibly some altitudinal movement downslope in May-Jul cold season; otherwise, none known.

**Status and Conservation.** **ENDANGERED.** Restricted-range species: present in East Malagasy Wet Forests EBA. Has very small and severely fragmented range, within which extent of rainforest habitat appears to be diminishing. Its habitat, however, is not so threatened as are many in Madagascar. Recent observations indicate that this species is less rare than was previously believed, and even common in some places; probably occurs in all intact forest above c. 1200 m. Present in at least 10 protected areas, e.g. Ranomafana, Andringitra, Andohahela and Mantadia National Parks, Anjanaharibe-sud Special Reserve, and Perinet Special Reserve. Total population size not known, but thought possibly to number 10,000 or more adults. Main threat is habitat loss from uncontrolled bush fires and agricultural encroachment. Although higher-altitude forests in E Madagascar are more remote than other forest types, and therefore the last to be cleared for agriculture, they are nevertheless extremely fragmented, and also vulnerable to fire; in dry years, some of this species' habitats suffer burning.

**Bibliography.** Anon. (1999d), Benson (1974, 1976), Benson *et al.* (1976-1977), Collar & Andrew (1988), Collar & Stuart (1985, 1988), Collar *et al.* (1994), Dee (1986), Dowsett & Dowsett-Lemaire (1993), Dowsett & Forbes-Watson (1993), Eck (1968), Evans *et al.* (1992), Fishpool & Evans (2001), Fuller (2000), Garbutt (2001), Goodman & Putnam (1996), Goodman, Pidgeon *et al.* (1997), Goodman, Rakotonondrovony *et al.* (1996), Greenway (1967), Hawkins & Goodman (1999), Hawkins, Safford *et al.* (1997), Hawkins, Thiollay & Goodman (1998), Johnson & Stattersfield (1990), King, W.B. (1978/79), Langrand (1995), Langrand & Sinclair (1994), Longmore (1985), Milton *et al.* (1973), Morris & Hawkins (1998), Rakotonomenjanahary & Hawkins (2000), Safford & Duckworth (1990), Salomonsen (1933, 1934, 1965), Sinclair & Langrand (1998), Stattersfield & Capper (2000), Stresemann (1937), Wetmore (1953), Yamagishi *et al.* (1997).



Class AVES  
Order PASSERIFORMES  
Suborder EURYLAIMI  
**Family PITTIDAE (PITTAS)**



- Small to medium-sized birds with strong bill, short to medium-short tail and long legs, many with colourful plumage.
- 15-29 cm.



- Afrotropical, Oriental and Australasian Regions.
- Forest.
- 1 genus, 30 species, 91 taxa.
- 9 species threatened; none extinct since 1600.

### Systematics

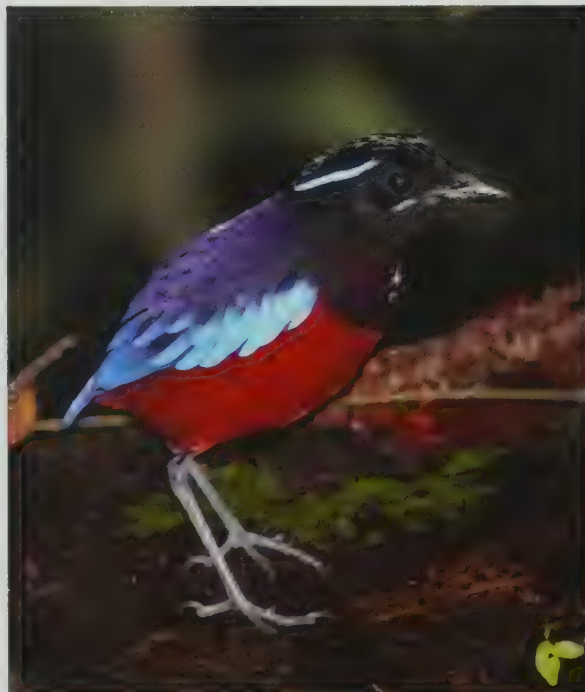
The DNA-DNA hybridization experiments carried out by C. G. Sibley and J. E. Ahlquist led those authors to conclude that the pittas formed a monophyletic group, with a single common ancestor. Although there appears to be no reason why this should not be so, the identity of the family's closest relatives has been a matter of debate. In 1975, J. J. Morony and colleagues placed the pittas between the plantcutters (Phytotomidae) of South America and the New Zealand wrens (Acanthisittidae). Four years later, E. Mayr placed the Pittidae between the plantcutters and the asities (Philepittidae) of Madagascar, an approach adopted also by H. E. Wolters, but with the asities coming before the pittas and the plantcutters after them. Sibley and Ahlquist's work, however, suggests that the pittas, while not too far removed from the New Zealand wrens, are most closely related to the broadbills (Eurylaimidae) and the asities, of which they are a sister-group. This finding has gained general acceptance, and it is worth pointing out, incidentally, that more recent authors have also combined the asities with the broadbills in a single family.

There are no fossil records of pittas, but the dusky to blackish stripes which are present on the feathers of most members of this family (see Morphological Aspects) may suggest that they derive from more streaked ancestors. It is possible, therefore, that the pittas, like most bird species with striped plumage, may once have lived in more open habitats. The greatest diversity of species is found in South-east Asia, suggesting that the Pittidae originated in that area and from there radiated westwards into India and Africa, and southwards and eastwards to Sumatra, Borneo, the Philippines, New Guinea and Australia. The Afrotropical species may have colonized that region at an early stage, as the structure and pigmentation of the green feathers have retained several primitive characters not found in any other pitta species. In addition, the African Pitta (*Pitta angolensis*) has what appears to be a unique display (see Breeding).

In his *Systema Naturae* of 1766, Linnaeus placed the Indian Pitta (*Pitta brachyura*) in the crow family (Corvidae), naming it *Corvus brachyurus*. Ten years later, Statius Muller, following Brisson and Buffon, placed it in the thrush family (Turdidae), a group with which the pittas do, indeed, have much more in common, including, for instance, long legs and certain aspects of the moulting strategy and feeding behaviour. This superficial resemblance to the thrushes is alluded to in the pittas' colloquial names of "jewel-thrushes" and "ant-thrushes" (see Relationship with Man).

The pittas became more widely known from 1863, when D. G. Elliot published his magnificent work entitled *A Monograph of the Pittidae*. The book has 32 colour plates, most of them painted by the author himself. Elliot restricted the generic name *Pitta* to those species having a comparatively long, graduated tail, and used *Brachyurus* for the remaining, very short-tailed species.

Less than two decades later, in 1880/81, J. Gould, in his unfinished monograph of the family, moved the Indian Pitta from the genus *Brachyurus* to *Pitta*, in addition to which he adopted the generic name *Cyanopitta* (a subgenus in Elliot's 1870 revised edition) for the Azure-breasted Pitta (*Pitta steerii*) and also followed other authors in recognizing seven further genera. Thus, he placed the three longer-tailed species, the Banded (*Pitta guajana*), Bar-bellied (*Pitta ellioti*) and Gurney's Pittas (*Pitta gurneyi*), in the genus *Eucichla*; the Ivory-breasted Pitta (*Pitta maxima*) in *Leucopitta*; the Blue-banded Pitta (*Pitta*



The **Garnet Pitta** forms a superspecies with the **Graceful Pitta** (*Pitta venusta*), the two differing in plumage, voice, altitudinal preferences and the tail length. The taxonomy of the form *ussheri* of northern Borneo is somewhat contentious: some authors believe that differences in plumage features and voice, combined with a lack of interbreeding where the ranges overlap, suggest it merits separation as a distinct species. However, *ussheri* is not so very distinctive, and some cases of hybridization have been recorded, so on present knowledge it seems best to retain this form as a race of the Garnet Pitta.

[*Pitta granatina ussheri*, Sabah, Borneo. Photo: Frank Lambert]



The **Red-bellied Pitta** is the most widely diversified species in the family, with a total of 24 subspecies recognized, 13 in the Philippines and Wallacea and 11 in New Guinea, Australia and the South Pacific islands. Some authors believe the subspecies *dohertyi* of the Banggai and Sula Islands to be a full species, on the basis of plumage differences, a narrower bill and an apparently distinctive call. Close examination of a large sample of all 24 subspecies, however, showed that *dohertyi* was no more convincing a candidate for splitting than several of the numerous island races of the Red-bellied Pitta. Further investigations, including molecular-genetic analysis, may show that not only *dohertyi*, but perhaps also other distinctive forms such as *novaeahibernicae*, should be given full species status, but meantime it probably makes more sense to continue to regard all as races of the Red-bellied Pitta.

[*Pitta erythrogaster novaeahibernicae*, New Ireland.

Photo: William S. Peckover]



*arquata*) and the Garnet Pitta (*Pitta granatina*) in *Phoenicichla*; the Hooded Pitta (*Pitta sordida*) in *Melanopitta*; the Red-bellied Pitta (*Pitta erythrogaster*) in *Erythropitta*; the Blue-headed Pitta (*Pitta baudii*) in *Iridipitta*; and the Giant Pitta (*Pitta caerulea*) in *Gigantipitta*. Moreover, Gould followed current trends in including within Pittidae the Lesser Melampitta (*Melampitta lugubris*) from New Guinea, although that species has long been considered to be unrelated to the pittas, instead now being treated as a close relative of the birds-of-paradise (Paradisaeidae). Just seven or eight years after Gould's work appeared, however, P. L. Sclater recognized only three genera of pittas when he produced the 14th volume of the *Catalogue of the Birds in the British Museum*: *Anthocincla* for the short-legged Eared Pitta (*Pitta phayrei*); *Eucichla* for the three species with a relatively long, graduated tail; and *Pitta* for all of the remaining members of the family. In his second monograph of the pittas, which appeared during 1893-1895, Elliot followed Sclater's treatment.

As long ago as 1816, L. J. P. Vieillot had been the first person to use the generic name *Pitta* for the whole family, though at that stage the vast majority of the more distinctive species had yet to be discovered. Wolters, in his 1975-1980 checklist, preferred the polygeneric approach, recognizing the six genera *Hydrornis*, *Iridipitta*, *Eucichla*, *Leucopitta*, *Anthocincla* and *Pitta*, together with some subgenera. The DNA-DNA hybridization experiments carried out by Sibley and Ahlquist suggested that further subdivision of the family might indeed be justified, although only four species were included in the analysis undertaken by those scientists. A thorough molecular-genetic study of pittas remains to be done. The other major recent investigation of the relationships of the Pittidae was conducted in 1987, by R. J. Raikow, who examined the hind-limb musculature of two pitta species to infer the phylogenetic relationships of the family among the Old World suboscines.

The pittas do appear to form a homogeneous group. It has been suggested that the splitting of the family into different genera would detract from nomenclatural stability, leading to a certain amount of confusion. It may indeed be best to postpone any such generic splits until sufficient information becomes available for them to be made with a reasonable degree of confidence. Even so, the treatment of the Eared Pitta remains controversial. This poorly known species differs from all other members of the family in having short legs, a slightly decurved and slender bill, and a very long hind claw, and it is strongly argued that it merits separation in the monotypic genus *Anthocincla*. The little information that exists about its displays and its feeding habits also reveals some apparently unusual features.

Historically, the number of pitta species recognized by different authors has varied from 24 to as many as twice that figure. In the late nineteenth century, Sclater mentioned 48 species in his catalogue, one more than did Elliot in the second edition of his monograph. Checklists published during the last three decades of the twentieth century, on the other hand, gave much lower totals, of fewer than 30, with Morony and colleagues recognizing only 24 species of pitta. Needless to say, all these figures should be taken in the context of their times: before the advent of the formal recognition of subspecies in trinomials, it was natural that the species concept be somewhat narrower.

In the second half of the 1990s, two major works on the Pittidae were published. The first of these, by F. Lambert and M. Woodcock, listed 32 species of Pittidae, whereas J. Erritzoe and H. B. Erritzoe, two years later, recognized 30 species. The discrepancy is due to differing opinions on the treatment of the taxon *dohertyi*, found in the Banggai Archipelago and the Sula Islands, to the east of Sulawesi, and of the form *ussheri*, living in north Borneo. Sibley and B. L. Monroe, in their world checklist, treated *dohertyi* as a full species, distinct from the Red-bellied Pitta. Lambert and Woodcock referred to apparent plumage differences





Most members of the family Pittidae have spectacularly beautiful plumage colours and in some aspects of their behaviour they recall thrushes (Turdidae), this giving rise to their early name of "jewel thrushes". Their colourful plumage has endeared them to aviculturists, while birdwatchers too are attracted by the birds' beauty and also relish the challenge of seeking these often shy and secretive species in dark and dense forest habitats. Pittas are fairly unusual among birds of the forest understorey in not showing generally dull plumage. Their bright, contrasting colours, most commonly green, blue, red, red-brown and buff, tend to be in sharply outlined patches. Several species have shining azure-blue on the wing-coverts and rump. As these two males of different **Banded Pitta** subspecies demonstrate, the head-pattern can be very striking, here through the combination of dark crown and mask set against yellow and whitish, with orange on the supercilium of the lower bird, of the race *irena*, which Gould called "one of Nature's living jewels". Other eye-catching features are the white on the wing-coverts and the barred underparts. The latter markings are also shared by the Banded Pitta with two other pittas, all three species also having a relatively long, graduated blue tail. Pittas tend to have the brightest colours on their underparts, while the upperparts are usually rather duller.

[Above: *Pitta guajana guajana*.  
Photo: Alain Compost/  
Bruce Coleman.

Below: *Pitta guajana irena*.  
Photo: Tony Tilford/Oxford  
Scientific Films]



The **Blue Pitta** may form a group with the poorly known and apparently rare *Schneider's Pitta* (*Pitta schneideri*) and the **Giant Pitta** (*P. caerulea*), all three having blue upperparts, including rump and tail. The Blue Pitta also shows disjointed barring mainly on the underparts, and has a bold dark mask, while there is an area of bright orange on the hindcrown and nape. Standing by its well-concealed domed nest, this male Blue Pitta shows the fairly heavy, slightly downcurved bill typical of pittas, and also particularly noticeable are the long, rather robust legs with long powerful toes, well adapted to the birds' terrestrial habits. Interestingly, leg colour varies considerably between individual pittas.

[*Pitta cyanea cyanea*,  
Khao Yai National Park,  
Thailand.  
Photo: Uthai Treesucon]



exhibited by the the "Sula Pitta", in particular the head pattern and darker feather centres on the upperparts, as well as possible vocal differences. In an examination of long series of specimens of all subspecies of the Red-bellied Pitta, however, *dohertyi* was found to be no more distinctive than any of the numerous other island races of this highly variable species, which also displays great geographical variation in vocalizations. Future research may indicate that *dohertyi* and perhaps other distinctive forms of the species, such as *splendida*, *rubrimucha* and *novaehibernicae* may merit species rank, but for the time being it is thought wiser to include all of them as subspecies of the Red-bellied Pitta.

The main reasons put forward for treating *ussheri* as a separate species from the Garnet Pitta are differences in appearance and vocalizations, and the fact that the two appear not to interbreed in areas where their ranges meet each other. Although they do, admittedly, exhibit a certain dissimilarity in several plumage features and calls, the differences are considered to be too small to be utilized for species recognition. Moreover, hybrids between *ussheri* and the nominate subspecies of the Garnet Pitta are well documented, even though some authors have queried the identification of some of these specimens. Whether hybridization can be considered as adequate evidence for conspecificity is another matter, and opinions on this vary widely. Again, until more information becomes available, it seems better to continue to treat the form *ussheri* as a subspecies of the Garnet Pitta. Some authors have regarded it as a race of the closely related Graceful Pitta (*Pitta venusta*), but that differs considerably in the colours of the body and upperwing-coverts and in the length of the tail. In this connection, it is perhaps relevant to mention that the supposedly all-yellow chick of *ussheri*, mentioned by some recent authors, does not belong to this taxon at all (see Morphological Aspects).

Owing to the fact that relevant studies of the pittas are both very few in number and incomplete in coverage, the taxonomy within the family is currently based primarily on external morphology, especially colour patterns. Although this provides a somewhat superficial parameter, it enables the 30 members of the family to be divided into seven groups. The first of these contains just one species, the highly distinctive Eared Pitta, which, in addition to its slender, decurved bill and its short legs with a very long hind claw, is largely rufous in colour. Its head pattern,

with a black crown and nape, and with very long, black-edged whitish feathers on each side of the crown, resembling horns or ears, is also very distinctive. In addition, a series of behavioural features argue strongly in favour of returning this species to its former position in the monospecific genus *Anthocincla*.

The second group comprises the Blue-naped Pitta (*Pitta nipalensis*), the Blue-rumped Pitta (*Pitta soror*) and the Rusty-naped Pitta (*Pitta oatesi*), all of which have rather dull plum-



**Blue-rumped Pittas** are typically shy and secretive and it is not surprising that the species has been rarely photographed in the wild. It forms a well-marked group with the **Blue-naped Pitta** (*Pitta nipalensis*) and the **Rusty-naped Pitta** (*P. oatesi*). These three species share rather drab brownish plumage, a rather faint broken breastband and similar vocalizations. The Blue-rumped has the crown, nape and mantle variably tinged bluish-green, in line with its generally dull colours, but the rump and uppertail-coverts are bright blue and strikingly conspicuous in flight.

[*Pitta soror tonkinensis*.  
Photo: Roland Seitre]





An Indonesian endemic and one of the smaller members of the family, the **Elegant Pitta** is found in five different subspecies on many islands in the southern part of the archipelago. The bird portrayed shows the classic large eye, strong bill, and large feet on long strong tarsi characteristic of most Pittidae. The pale lateral crownstripe contrasts strongly with the otherwise velvety black colour of the head. Neither the large black central belly patch typical of race *concinna*, nor the green distal half of the tail and blue rump, can be seen in this photo, but some scarlet shows on the lower belly and undertail-coverts. The white band across the primaries, conspicuous in flight, is completely concealed.

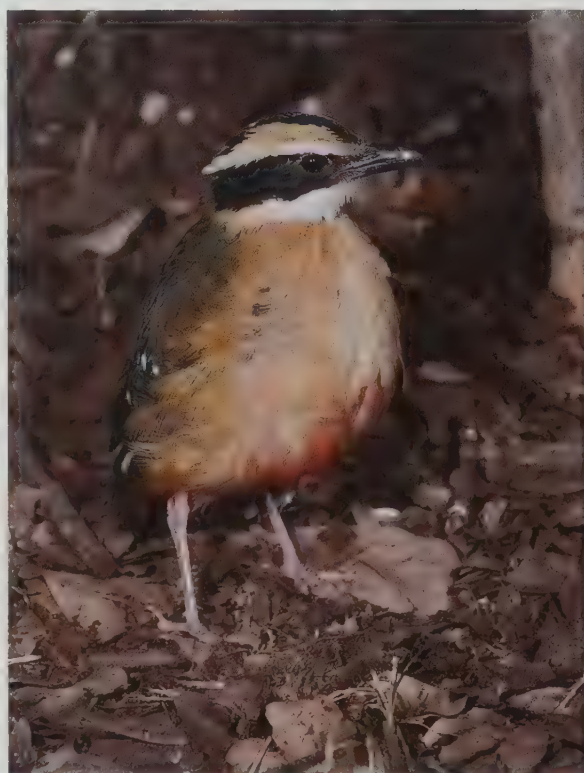
[*Pitta elegans concinna*, Poco Ndeki, near Kisol, west Flores, Lesser Sundas. Photo: Frank G. Rozendaal]

age, with a broken breastband, and utter very similar vocalizations. They are considered to form a close-knit group. The next three, Schneider's Pitta (*Pitta schneideri*), the Giant Pitta and the Blue Pitta (*Pitta cyanea*), form a group of species having blue upperparts, the first two also possessing a broken breastband, while the Blue Pitta is intermediate between those two and the next group, the barred pittas. This next group, which includes the Banded, Bar-bellied and Gurney's Pittas, is characterized by the possession of comparatively longer tail feathers, which are graduated in length. The fifth group contains a single species, the Blue-headed Pitta, with dark purplish-blue underparts. One of two members of the family restricted to Borneo, it appears to have no close relatives, but its blue crown and its red-brown back indicate some affinity with Gurney's Pitta. All of the species in these last four groups, as well as the very different Eared Pitta, exhibit sexual dimorphism, and their juveniles, so far as these are known, have cryptic plumage colours and patterns.

The five species which make up the sixth group differ markedly from one another in general appearance, but all have some red on the underparts. The relationship between the almost black Superb Pitta (*Pitta superba*) of Manus, the largest of the Admiralty Islands, and the Ivory-breasted Pitta of the north Moluccas, is still unclear; both of these restricted-range species are rather large to very large and have a black head and upperparts, while the ivory-coloured breast and flanks of the second species are unique among the Pittidae. They show no sexual dimorphism, and the young differ in plumage from the adults only in being duller. The three other species in this group are the Blue-banded Pitta, the Garnet Pitta and the Graceful Pitta, the last two of which form a superspecies. In contrast to the Superb and the Ivory-breasted Pittas, they are very small and have weak, rounded and notably curved wings, suggesting the shared acquisition of a sedentary lifestyle. There are no external differences between the sexes, and the young are cryptically coloured.

All of the family's remaining 14 species have green or greenish upperparts, and all but one of them have red on the underparts. Together, they form the final and largest group. This contains the only migratory pittas, and includes what are generally the most common members of the family. All of these species are sexually monomorphic, and in all except two the

juveniles look like duller versions of the adults. The group also includes the only Afrotropical representatives of the Pittidae, the superspecies formed by the African Pitta and the Green-breasted Pitta (*Pitta reichenowi*); both have prominent "horns" created by elongated feathers at the side of the nape. Two others, the Azure-breasted Pitta and the Whiskered Pitta (*Pitta kochi*), are confined to the Philippines, where the more widespread Hooded and Red-bellied Pittas also occur. The Azure-breasted is the only member of the family to have pale azure underparts, but its black head reveals a certain affinity with the



Most pittas are sedentary, but **African Pittas** of the large race *longipennis*, with pointed wingtips, regularly migrate as much as 2000 km. Apart from the size difference, *longipennis* has less red on the underparts than *pulih*, and usually a more uniformly coloured supercilium, as well as violet on the rump and wing-coverts; it lacks the greenish sheen on the underparts of *pulih*. Displaying African Pittas stand erect, with the cinnamon-buff breast feathers ruffled and the elongated supercilia raised at the rear, giving the impression of "horns", as also occurs in the closely related Green-breasted Pitta (*Pitta reichenowi*).

[*Pitta angolensis longipennis*, Haroni-Rusito confluence area, east Zimbabwe. Photo: P. J. Ginn]



Lacking the bold, bright colours of many other pittas, being largely a rather cryptic rufous-brown, the **Eared Pitta** is likely to be confused only with immatures of other pitta species. It is also notable for the rather short legs, long and slender bill and very long hind claw. The proposal to place it in a separate monotypic genus, *Anthocincla*, is gaining considerable support, and is backed up by some features of its behaviour, though other authors assert that in aspects such as voice and breeding biology it is fairly typical of *Pitta*. Male head patterns vary considerably among individuals.

The most striking feature is the elongated and pointed feathers, usually white with black scaling, which protrude to the rear as "ears" or "horns".

[*Pitta phayrei*,  
Kaeng Krachan National  
Park, Thailand.  
Photo: Bernard van Elegem]



Hooded Pitta. Some of the Hooded's twelve subspecies have the top of the head and the nape red-brown, a feature shared by the Whiskered Pitta, the only species with olive-brown upperparts, and also by the Red-bellied Pitta. The Whiskered and the Red-bellied are closely related, and their juveniles have cryptic plumage coloration.

The next seven of the "greenbacks" have a variably black side of the head and a buffish breast. The Indian Pitta and the Fairy Pitta (*Pitta nympha*) are so similar in appearance that they were until a few years ago considered by many authors to be

conspecific, despite the fact that they have geographically discrete distributions and, in addition, a number of distinctive features that are easily visible in the field. The Blue-winged Pitta (*Pitta moluccensis*) and the Mangrove Pitta (*Pitta megarhyncha*), on the other hand, have partly overlapping ranges, but they differ more markedly in ecology and behaviour and are separated from each other by habitat. Despite this slight overlap, all four may be considered to form a superspecies. Three of the five subspecies of the Elegant Pitta (*Pitta elegans*), which is distributed over many small islands in Wallacea, have a blue or bluish tinge on the pos-

Among the sexually dimorphic pittas are the three blue-backed species, including the large and robust **Giant Pitta**. In this species, the most obvious difference between the sexes is in the upperparts, blue in the male but rufous-brown in the cryptically coloured female, though her tail is blue like the male's. The male also shows a black hindcrown, nape and necklace, which in the female are reduced to a black-scaled greyish crown.

[*Pitta caerulea caerulea*,  
Khao Nor Chuchi Wildlife  
Sanctuary,  
southern Thailand.  
Photos: Uthai Treesucon]







terior part of the buff supercilium, and all five have a black crown, whereas the crown of the Noisy Pitta (*Pitta versicolor*) of coastal east and north-east Australia is red-brown. The Black-faced Pitta (*Pitta anerythra*) of the Solomon Islands is the sole member of this large group that has no red on the belly, but it does have red-brown on the crown or hindcrown; a further characteristic is its very short and curved wings, suggesting a poor capacity for flight. The last of the 14 "greenbacks", the beautiful little Rainbow Pitta (*Pitta iris*) of north Australia, has a scarlet belly and a chestnut lateral crownstripe, but most of the head and underparts are black and the green of the back has a glistering olive-green sheen. The relationships of the Elegant, Noisy, Black-faced and Rainbow

Pittas are uncertain, but the four are probably best considered as forming a superspecies.

While the above groupings should be regarded as somewhat tentative, they do offer a practical working hypothesis when examining the systematics of this family. Different arrangements have been preferred by some authors. For example, Sibley and Monroe considered the Superb, Ivory-breasted and Hooded Pittas to form a superspecies, and this treatment was followed by Lambert and Woodcock. The morphological differences that exist between those three pittas, however, seem too great for such a close relationship to be regarded as acceptable.

Their solitary and sedentary habits render most pittas poor colonizers of remote islands. Some island forms do exist, however, and these often represent borderline cases between what could be considered subspecies and what could be treated as species. Island subspecies, geographically isolated from the main area of a species' distribution, exhibit more rapid and discontinuous differentiation than do mainland forms, in which clines extending over great distances are common. It seems inevitable that new molecular-genetic studies, and investigations using other new forms of technology, will lead to changes in both the sequence and the taxonomic relationships of the Pittidae, and to the upgrading of some of the taxa of polytypic pitta species. The best examples of the latter involve the Red-bellied Pitta, with 24 subspecies, and the Hooded Pitta, with twelve subspecies; as alluded to above, many of the races inhabiting various islands lying between continental Asia and New Guinea are so distinctive that they may well represent several separate species. The case of the Red-bellied has been discussed above. In the Hooded, the races *goodfellowi*, *novaeguineae*, *meffoorana* and *rosenbergii*, encompassing the region of New Guinea, would possibly be better treated as forming a separate species. To date, however, the lack of specimen material and of field studies makes it advisable to await the results of future research before jumping to conclusions.

Finally, it may be of some interest to note that, as with a great many avian taxa, two species of Pittidae bear scientific names that are clearly the result of misunderstandings. The Banded Pitta was given the specific name *guajanus* because the species was erroneously thought to come from the Guianas, in South America. Similarly, the Blue-winged Pitta carries the species name *moluccensis*, despite the fact that it has never been recorded in the Moluccas.

Even brightly coloured adult pittas can be difficult to see in the darkness of the rainforest and, as might perhaps be expected, the inexperienced juveniles gain protection from cryptically coloured, streaked and spotted, brownish plumage. While adults of all the 24 subspecies of the **Red-bellied Pitta** have blue on the breast and a red belly, juveniles are dull brown above, with a whitish throat and buffish-white underparts; there is darker brown or black mottling on the breast and the only blue is on the rump and tail.

[*Pitta erythrogaster inspeculata*, Talaud, off north-east Sulawesi. Photo: Frank Lambert]



The **Indian Pitta** is one of a group of 14 species in the family with cryptically coloured green or greenish upperparts. It inhabits scrub jungle, sometimes with bamboo, semi-cultivation, and deciduous and evergreen forest, mostly in lowlands and foothills, where the deep leaf litter provides optimal foraging habitat. During migration, if forced to seek shelter in poor weather or just after arrival, especially in misty conditions, birds are attracted by lights and often come into gardens, sometimes even entering buildings.

[*Pitta brachyura*, Borivali National Park, Maharashtra, India. Photo: I. Kehimkar/DPA]



Characteristic pitta habitat comprises a rich forest understorey, leaf litter and the proximity of flowing water. Throughout most of its considerable range, the **Red-bellied Pitta** inhabits rainforest or monsoon forest with secondary growth, usually below 1000 m. In Sulawesi, it occurs in the lowlands and up to at least 120 m, being particularly common on volcanic soils in forest with dense rattan palm. In places, this species co-exists successfully with the Hooded Pitta (*Pitta sordida*), the Red-bellied Pitta being more often found in hills.

[*Pitta erythrogaster celebensis*,  
Tangkoko,  
north-east Sulawesi.

Photo: Bernard van Elegem]



### Morphological Aspects

Diagnostic characters of the Pittidae include a strong, slightly curved bill, a stout body, a short tail, and a strong and long tarsus with a long anterior and posterior plate, similar to that of the typical thrushes. The feet are moderately long to long, with the first digit generally the longest or of the same length as the third; the second and fourth digits are much shorter and are similar in length. The claw of the hind toe is always the longest, and the claw of the fourth toe is most often smaller than that of the second. The short or shortish wing has ten primaries, the outermost of which is long and reaches almost to the tip of the wing, and the tail has twelve short feathers. Pittas vary in size, from 15 cm to 29 cm, and also in weight. The smallest females of the Hooded and Red-bellied Pittas weigh as little as 42 g, whereas males of the largest species, the Giant and Ivory-breasted Pittas, can have a weight of almost 210 g.

Those pitta species having distributions which cover a broad range of latitudes conform with "Bergmann's Rule", which states that selection favours a large body at higher, cooler latitudes or altitudes. This is especially noticeable in the case of the Noisy Pitta of Australia, where the small subspecies *simillima* of the northern Cape York Peninsula has an average wing length of 122 mm, compared with 130 mm for the nominate race living in the cooler areas farther south. More surprisingly, there is also a difference in clutch size (see Breeding).

In the majority of species, the plumage of both sexes is variegated and colourful. Green, blue, red, red-brown and buff dominate, but many other shades are often present. Most of the colours are bright and occur in sharply demarcated patches, which are relatively uniform and unmarked. The juvenile plumage is brownish, with streaking and spotting.

It is worth drawing attention to an apparently erroneous account which has appeared in print before. This relates to a "recently hatched chick" which was "entirely yellow", and which was said to have been collected from a nest of the Garnet Pitta of the race *ussheri* in north Borneo. If this were the case, then this taxon would be unique among the Pittidae in having a chick plumage that was totally different from that of the adult. Furthermore, the museum label attached to the adult Garnet Pitta accompanying the chick states that the two were shot together, but makes no mention of a nest; in addition, the chick's flight-feathers are fully grown, so that it cannot have been newly hatched. The picture becomes even more clouded when it is realized that the staff at

the Natural History Museum, Tring, UK, where the specimens are held, have been unable to determine the species of bird to which the yellow chick belongs, so the two have simply been placed together for the sake of convenience.

Pittas are ground-dwelling birds inhabiting forest or semi-forest, where they feed on insects, worms, snails, small vertebrates and even vegetable matter and fruits (see Food and Feeding). Most birds of the forest understorey have dull-coloured plumage, which provides them with camouflage in this habitat, whereas bright colours are often associated with life in the sunlit tree-tops. The pittas are, therefore, a somewhat surprising exception to this general rule. Despite the fact that they inhabit dark

When disturbed, in contrast to many other pitta species which prefer to hop away into dense cover, the **Ivory-breasted Pitta** tends to take flight quite easily, often whirring away for some distance.

Calling birds also perch regularly in trees, often on bare branches in the lower canopy, up to 20 m above the ground. Territorial disputes involving much calling, sometimes in long bouts from adjacent trees, also take place in the lower canopy, and this is presumably analogous to the song-duels of other passerines.

[*Pitta maxima maxima*,  
Labi Labi, Halmahera,  
Moluccas.

Photo: Bernard van Elegem]







thickets of the forest floor, many members of this family are highly colourful, which perhaps explains why they are so popular among ornithologists. The brightest colours are usually on the underparts, but with glittering and lustrous blue and blue-green on the wings, rump and uppertail-coverts. These so-called "badges", however, can be concealed, those on the wings being covered by the long scapular feathers and that on the rump being hidden by the wings, which, together with the back, are mostly of a green or brown shade. Because most predators approach from above, this is a good strategy. Surprisingly, most fieldworkers report how difficult it is to find pittas in the darkness of the rainforest, where only here and there do the rays of dazzling sunlight filter through the dense vegetation.

Only four species have conspicuous colours on the head and upperparts, visible to potential predators. These are Schneider's, Giant, Blue and Blue-headed Pittas. Although most members of the family are countershaded, four species have darker underparts. Gurney's Pitta has a broad black band across the middle of the breast and belly, while the Blue-headed Pitta has the middle of the breast shining black, with the breast sides, belly and flanks dark blue-violet, a colour which in most lights appears black. The Superb Pitta is glossy black on the underparts, with the central lower breast, belly and undertail-coverts bright red. The Rainbow Pitta of Australia is even more extensively dark below, having the underparts almost entirely black, except for a scarlet lower belly and undertail-coverts.

Cryptic coloration in both sexes is found only in the Eared Pitta, but is also present to some degree in the females of the ten other sexually dimorphic species, examples of which include the Blue-naped and Rusty-naped Pittas, the Giant and Blue Pittas and the Banded and Blue-headed Pittas. As would be expected, all juvenile pittas exhibit cryptic coloration to varying degrees.

It is possible that the colour badges are also selected for through female choice, as being indicative of male fitness, or better condition. Sexual selection and natural selection often pull in opposite directions, the first increasing the attractiveness of the males, and the second favouring aspects of security such as manoeuvrability and cryptic coloration. The way in which these behavioural and ecological trade-offs are linked with plumage coloration among the pittas could provide an interesting subject for study.

A great majority of pittas, 24 of the 30 species, have a white wing patch of variable size, visible on most species only when the wings are spread. In the darkness of a jungle, where white will flash like a bright light, this is perhaps a mechanism designed to startle potential predators for the fraction of a second which can make the difference between life and death. It is notable that the three weak fliers with particularly short, rounded and curved wings, the Blue-banded, Garnet and Graceful Pittas, do not have any white in the wings.

Most pittas have short and rather rounded wings, but the four migrants in the family, the African, Indian, Fairy and Blue-winged Pittas (see Movements), all show more pointed wingtips. It is significant that the most successful pittas are the migratory species or subspecies, found over large geographical areas, and com-

*Endemic to Borneo, the Blue-banded Pitta is found in a wide altitudinal range, but most frequently at higher elevations. It generally favours mixed dipterocarp forests, and in Sabah it can be found in forest where bamboo is dominant. It is often encountered in areas with fallen tree trunks, and the birds often call from fallen trunks or flee to them when disturbed. Pittas tend to be inactive during the hottest part of the day, often standing on one leg on a root or fallen branch, and they can be difficult to spot at such times in dark areas of the forest.*

[*Pitta arquata*,  
Poring Hot Springs,  
Sabah, Borneo.  
Photo: Bram  
Demeulemeester]



*The Mangrove Pitta is indeed a mangrove specialist, occurring along coasts, at deltas and in tidal parts of rivers. Its posture and massive bill, well shown in this photo, strongly suggest a very small perched heron (Ardeidae). Birds will leap from root to root to escape, but also frequently fly when disturbed and may then be mistaken for a kingfisher (Pelargopsis). Feeding largely on crabs, the Mangrove Pitta will forage on the seaward side of mangroves, even perching on moored boats; it will cross open mud between vegetation patches and also use drier areas nearby.*

[*Pitta megarhyncha*,  
Kuala Selangor, Malaysia.  
Photo: Frank G. Rozendaal]



Pittas are active during the day, but will usually rest during the hottest period. For nocturnal roosting, birds normally use a perch in a bush or tree, low down or as much as 3-5 m up. Looking like some exotic flower or fruit, this colourful **Garnet Pitta** has adopted a remarkable ball-like posture with the plumage markedly ruffled and the head tucked into the back feathers. A similar roosting posture has been described for other pitta species.

[*Pitta granatina ussheri*,  
Danum Conservation  
Area, Sabah, Borneo.  
Photo: Michael & Patricia  
Fogden]



mon over most parts of their distribution. The Fairy Pitta is the only exception to this; as it makes long ocean crossings, it may be vulnerable to the vagaries of the weather (see Movements, Status and Conservation).

Like most monogamous birds, pittas do not exhibit any special male morphological ornaments or other features for display purposes. Fourteen species are sexually monomorphic, and seven others show only minor differences between the sexes. Only nine species are strongly dimorphic, these being the Eared Pitta, and the Blue-naped, Schneider's, Giant, Blue, Banded, Bar-bellied, Gurney's and Blue-headed Pittas. Judging from what is known for other bird families, the glittering blue areas on the wings and rump are presumably used for threatening opponents during territorial defence and to impress the female during courtship. Should a site be occupied, an unsettled male probably conceals most of his epaulets without challenging the owner.

There is striking variation in the colours of the legs and feet of pittas. In the Blue-headed Pitta, for example, they range from grey-blue to horn-coloured or to flesh-coloured, in the Garnet Pitta from plumbeous to purplish-brown or blue, in the Whiskered Pitta from brownish to slate-blue, in the Elegant Pitta from pale flesh to reddish-brown, and in the Rainbow Pitta from flesh-coloured to silvery grey or reddish-grey. Since most of these descriptions are taken from expedition skins, for which the bare-part colours are recorded soon after the death of the bird, it would seem reasonable to assume that most of them are accurate. In 1982, N. Burley and co-workers pointed out that the tarsi and toes of many birds are often brightly coloured, and that colourful tarsi could well be important in the mate-choice component of sexual selection because they might reflect individual differences in levels of circulating testosterone and/or carotenoid pigments. Varying iris colour, as seen in the Blue-winged Pitta, may also provide information about the male's physical condition. Interpretation of this is somewhat speculative, although it appears that sexual selection is causally related to the divergence of populations. This is a profitable field for future research.

An extremely interesting plumage feature, and one which is unique to the Pittidae, is the dusky to black stripes exhibited by many individuals of nearly all members of the family. This feature was first described in full in 1998, by Erritzoe and Erritzoe. The dusky markings take the form of arrow-shaped streaks in the middle of the feathers, and appear most often on the upperparts; they are normally visible only on the upper surface of the feather. The pointed end is anteriorly oriented, but non-pointed streaks also occur. Typically, the dark stripes are present on the blue or

blue-green wing patches and rump, those on the rump always being glossy blackish and, unlike the dusky stripes, also visible on the underside of the feather. It would therefore be more correct to speak of dusky and glossy black streaks. These markings are never found on the head, chin, throat, thighs, undertail-coverts or tail; nor are they present on the flight-feathers, although streaks are sometimes seen on the tertials. They can be found on green, olive-green, blue to blue-green and azure feathers. Four species, the Green-breasted, Azure-breasted, Hooded and Red-bellied Pittas, also have similar streaks on the underpart feathers. The smallest dusky stripes recorded are for the Red-bellied Pitta, on which they measured  $2.3 \times 0.8$  mm, while the largest, on an Elegant Pitta, had dimensions of  $18.4 \times 3.4$  mm.

Pittas commonly assume an upright posture when alert, as demonstrated by this **Blue-winged Pitta**.

Some species are also known to adopt a similar pose during certain displays, and this is probably more widespread than currently known. Ivory-breasted Pittas (*Pitta maxima*) calling on the ground adopted almost penguin-like erect postures and, following a courtship chase, a pair of Hooded Pittas (*P. sordida*) similarly stretched up to their maximum height, before relaxing into the normal posture, bobbing their tails up and down and calling. In display on territory boundaries, the well-studied Rainbow Pitta (*P. iris*) moves from an initial upright posture to perform slow bowing movements in which the breast nearly touches the ground.

[*Pitta moluccensis*.  
Photo: Roland Seitre]





The number of individuals of a species exhibiting this feature varies hugely, from 4% in the Mangrove Pitta to 68% in the Noisy Pitta. Similarly, the number of stripes varies considerably from one individual to another. Within the species, it seems that the most colourful forms have the most stripes. Furthermore, dusky streaks are slightly more frequent on males than on females, and are rarely found on juveniles.

Significant differences exist between populations in the prevalence of dusky streaking. For example, of a collection of Blue-winged Pittas taken in Myanmar: from Amherst, there were 26 specimens with streaking but only one without; from Bankasoon, 18 streaked, seven unstreaked; and from Tenasserim, 13 streaked, eleven unstreaked. Again, for the Rainbow Pitta, about 60% of 23 skins taken at different sites exhibited dusky streaks, yet around Darwin, Australia, not one with streaking was found amongst 89 ringed birds, all of which were carefully examined.

Rainbow Pittas undergo a post-nuptial moult, and it seems likely that this applies to all members of the family. In the case of the Ivory-breasted Pitta and the Suberb Pitta, the flight-feathers are moulted descendantly, starting with the innermost primary and gradually proceeding outwards. In connection with moult, an unusual and rather mysterious phenomenon occurs among the pittas. Some individuals, having completed the moult into adult plumage, reveal a complete absence of feathers on the head and neck, or have these areas nearly bare, with only the feather pins showing. Nineteen such examples, involving nine species of pitta, have been found in museum collections, and one instance has been described in the literature. There is no explanation for this most curious phenomenon, which has otherwise been reported only by D. W. Snow for a population of Eurasian Blackbirds (*Turdus merula*) at Oxford, England, in the 1950s.

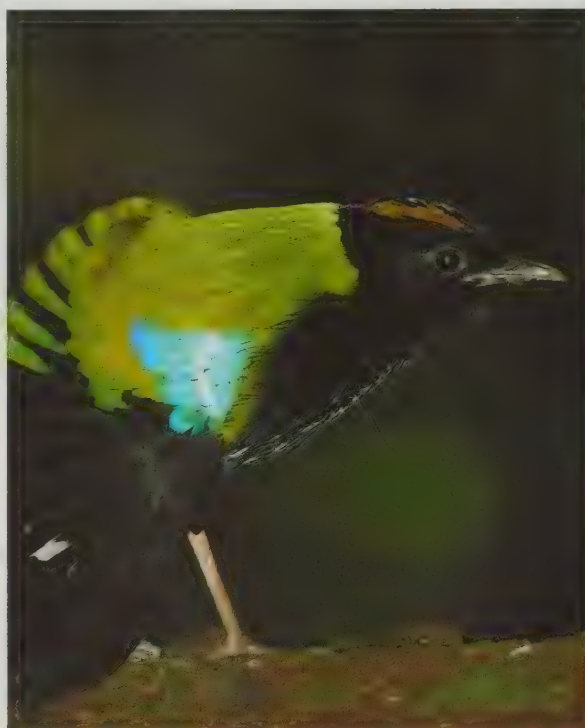
## Habitat

Most pittas inhabit tropical forest, semi-forest and scrub, and many species have a penchant for living near watercourses. The typical habitat is forest with a rich, moist understorey and a ground cover of leaf litter, frequently on limestone and in areas with steep-sided ravines. The Noisy Pitta is often found in moist forest with moss-covered rocks, and the Rainbow Pitta frequently occurs in monsoon forest with vine thickets and in eucalypt (*Eucalyptus*) forest. Many species, among them the Eared, Blue-naped, Blue-banded, Indian and Blue-winged Pittas, frequent bamboo thickets, and some, including the Giant and Garnet Pittas, can be found in swamp-forest and other marshy habitats. The Mangrove Pitta is, as its name suggests, a mangrove specialist.

Ten species of pitta occupy lowland rainforest, one of the world's most threatened habitats. Lowland-forest specialists include Gurney's Pitta, with an altitudinal limit of 160 m, the Rainbow Pitta, recorded at up to 400 m, and the Garnet Pitta, which ascends to 500 m. The Blue-headed and Ivory-breasted Pittas can be found at slightly higher elevations, occurring at up to 600 m, and the Bar-bellied Pitta and the Black-faced Pitta to 800 m. Although the Superb Pitta has not yet been recorded above 100 m, it probably does also occur at higher elevations. In common with a number of other lowland-rainforest specialists, Gurney's Pitta is believed to be on the brink of extinction as a result of serious loss of its habitat (see Status and Conservation). Two other pittas, the Blue-winged and Mangrove Pittas, are also lowland species, but the former can be found at higher altitudes outside the breeding season. The Fairy Pitta has been recorded at up to 1300 m in Taiwan, but it generally lives at lower levels in Japan.

The remaining members of the family inhabit forest from the foothills up to about 1800 m, and a few reach even higher altitudes. The Blue-naped Pitta and the Red-bellied Pitta have been found at 2100 m, the Whiskered Pitta at 2300 m, Schneider's Pitta at 2400 m, and the Rusty-naped Pitta at 2600 m.

The highest elevation at which a pitta has been recorded is 2980 m. The species involved was a Blue-winged Pitta, found in the province of Gansu, in central China, and presumed to have been a vagrant.



Spreading and flicking of the wings and similar movements of the tail are typical of an active pitta in a variety of contexts. The effect of such movements, demonstrated here by a **Rainbow Pitta** and a **Garnet Pitta**, is enhanced by their revealing the scintillating blue on wings and rump and the normally concealed white primary-patches. In antagonistic encounters, some species combine wing-spreading with crouching, and wing-flicking with a leaping display. Flicking and raising the wings to vertical, combined with alarm-calls, serves to distract predators.

[Above: *Pitta iris iris*, Northern Territory, Australia. Photo: Cyril Ruoso/Bios.

Below: *Pitta granatina granatina*, Lanjak-Entimau Wildlife Sanctuary, Sarawak, Borneo. Photo: Doug Wechsler/VIREO]

## General Habits

Pittas are mainly diurnal birds, requiring daylight in order to locate their often hidden prey. They are generally shy birds and are, therefore, very difficult to observe, but an imitation of their calls will usually bring them into view. When disturbed, many species prefer to hop into thickets rather than taking flight. Outside the breeding season most of them are solitary, and even young pittas seem rarely to have much close contact with their parents except when they are hungry. This strategy not only seems to offer them better protection against enemies, but also makes the transmission of parasites and pathogens less likely. There are, nonetheless, some records of migratory species occurring in loose flocks.

A close-up view of a pitta undisturbed in its natural surroundings is a memorable experience. If the bird is active, it can make



**The Mangrove Pitta**, a highly vocal but shy species, gives a loud, fluty double call, which has been rendered as "hhwa-hwa", "tu-will" or "tae-laew", and resembles the call of the closely related

Blue-winged Pitta (*Pitta moluccensis*).

The Mangrove Pitta generally calls from a treetop or from the canopy of mangroves, but there is a surprising report of a bird calling from its nest, which is not known for any other pitta. Like many other species, the Mangrove Pitta is especially vocal in the morning and evening, but it will also call during the day and at night, particularly by moonlight.

[*Pitta megarhyncha*,  
Johor, Malaysia.

Photo: Morten Strange]

itself very conspicuous through the flicking of its wings and tail, displaying the glittering blue colours on the wings and rump, and revealing the flashing white wing patch (see Morphological Aspects) as it moves sturdily in long hops and turns over dead leaves for the insects beneath them. Such a view makes an unforgettable impression on the observer, and it is no surprise that pittas are among the most popular and sought-after bird groups among birdwatchers. During the hottest part of the day, however, they frequently remain inactive, often standing on one leg on a root or a fallen branch, and at such times they can be very difficult to detect in dark areas of the forest.

Although the pittas are, in the minds of most people, associated with a terrestrial lifestyle, they roost most often in trees.

Pittas are strongly territorial. The African Pitta maintains a territory of 3000-3600 m<sup>2</sup>, while that of the smaller Rainbow Pitta can extend to over 10,000 m<sup>2</sup>. They also exhibit marked site-fidelity. E. C. Stuart Baker, for example, reported that a pair of Blue-naped Pittas returned in ten successive years to breed at the same spot under some small bamboo clumps close to his house in India. Even migratory species such as the Hooded and African Pittas are reported to hold stable territories in their non-breeding quarters.

In an observation of territorial defence involving two Elegant Pittas, the birds were described as standing less than a metre apart, each one with the neck outstretched and swaying from side to side very slowly and deliberately. The Rainbow Pitta has a bowing display, given when two territory-holding birds meet along a boundary. From an initial upright posture, the pitta bows stiffly and slowly downwards until its breast nearly touches the ground, the whole display taking five to 20 seconds and being accompanied by a sound resembling the purring of a cat. It then hops a short distance before repeating the show. It has been suggested that this ritual helps in the establishing and maintaining of territories. The same behaviour has also been recorded for the Red-bellied, Hooded and Garnet Pittas. If threatened, the Rainbow Pitta spreads its wings while in an upright posture and gives its alarm call. In similar circumstances, the African Pitta stands "on tiptoe", with the breast puffed out, and with the projecting buff feathers of the rear supercilia erected to resemble "horns".

A real fight has, however, been reported only once in the wild. Two male Giant Pittas in a primary forest in north Borneo



were heard calling for a period, the observer judging that they were probably at least 100 m from one another. Not long after, however, one of the males was seen chasing the other down a slope in the forest, the pursuit being briefly interrupted as the two scuffled on the forest floor, where they were locked together; the chase then continued as the two males flew at low level farther down the mountain.

Pittas appear to bathe regularly, and observations of captive individuals reveal that many members of the family indulge frequently in this activity. After each bath, they spend much time in preening the feathers. The African Pitta has been reported as using soil on its bill when preening. Sun-bathing has been observed

**Indian Pittas** call mostly at dawn and dusk from a bush or tree, sometimes on the ground. A clear double whistling "wheet-tieu" or similar is given, sometimes mixed with harsh, high-pitched sounds. As can be seen here, the calling bird adopts an upright posture with the head thrown back; after a short bout of calls it may move to another vantage point.

The Indian Pitta is migratory and also calls on its wintering grounds, initially using a harsh "jazz" or "hizz" call, presumably to establish a territory there. Its habit of calling early and late in the day in winter quarters earned it the Tamil name which translates as "six o'clock bird".

[*Pitta brachyura*,  
Royal Chitwan National  
Park, Nepal.  
Photo: Otto Pfister]







for the Hooded Pitta, the Noisy Pitta and the Rainbow Pitta, and the last of those has also been seen anting, for which purpose it exploited green ants.

Despite a frequent reluctance to fly, the majority of the pittas are capable fliers. The African Pitta, for example, flies low, fast and straight, and the flight of the Fairy Pitta has even been compared with that of a kingfisher (Alcedinidae).

## Voice

The vocalizations of pittas have often been described as "song". It may, however, be better to refer to them as calls, following the definitions of the two terms by B. Campbell and E. Lack. Those authors stated that songs are long and complex, and produced by males in the breeding season, whereas calls are short and simple vocalizations produced by both sexes at all times of the year.

All pitta vocalizations are easy to imitate. This is because they are short, monosyllabic or disyllabic, fluty or whirring notes,

and a few of them even sound like human-language words. In the case of the Rainbow Pitta, at least, both sexes call, although the male does so more often than the female.

That calling is an important component in competition between males is demonstrated by the fact that it is easy to attract and capture territory-holding male pittas by using playback of their recorded calls. In the breeding season, pittas can be highly vocal, especially in the period before egg-laying. Apart from the Mangrove Pitta, which often calls loudly while brooding, they are silent when on the nest. During the rest of the year, most species call in the early morning and the late evening. In cloudy weather, however, the Indian Pitta often calls throughout the day, and the Blue-winged and Mangrove Pittas call at night when the moonlight is bright and clear.

A rather characteristic aspect of the behaviour of the Pittidae is that the call of one individual will frequently stimulate others to respond, and the forest may resound with pitta calls during vocal periods. This is particularly noticeable in the case of the Ivory-breasted Pitta of the north Moluccas, which combines calling with a kind of grouping behaviour. Three to six of these birds will call and then slowly make their way towards one another, moving either on the ground or from branch to branch. When vocalizing from the ground, the birds often move after each call, but they can remain still for extended periods when calling from the trees. During bouts of calling, pittas on the ground assume an erect posture almost like that of a penguin (Spheniscidae).

Territorial calls uttered by pittas exhibit a wide interspecific variation. Gurney's Pitta, for example, gives an explosive "lilip", whereas the Superb Pitta utters a "coo-coo", the Mangrove Pitta "tu-will" and the Elegant Pitta "wea-tea hea". The territorial call of the Eared Pitta sounds like a yelping dog, while that of the Ivory-breasted Pitta is very like a human wolf-whistle. An observer on Borneo who hears cries like those of a baby may well be witnessing the vocalizations of the beautiful Blue-headed Pitta, and in Australia both the Noisy Pitta and the Rainbow Pitta can produce a cat-like purring sound. The most famous verbal rendition of a pitta call, however, must surely be the "walk to work" or "want a watch" of the Noisy Pitta.

The alarm call is the most uniform vocalization among the Pittidae. It is variously described as "keew", "keow", "kriaih", "skyeew" or "eeyow", although the Rainbow Pitta also gives a

*Usually calling from a perch at 2-7 m above the ground, the **Superb Pitta** most commonly gives a clear, rather deep and melodious whistle rendered "hwouw whouw" or "coo-coo". Calling duets occur with, for example, a double whistle every 4-5 seconds. Pittas are known sometimes to call with open wings, as this **Superb Pitta** demonstrates, and there are also reports of wing-flicking in this situation.*

[*Pitta superb*, Manus, Admiralty Islands, off northern New Guinea. Photo: Guy Dutton]



*Pittas forage mainly on the ground, frequently in leaf litter, where they will sweep or flick the dead leaves aside with sideways motions of the bill, or sometimes scratch among leaves with the feet. While most foraging is carried out in the undergrowth, both the **Rainbow Pitta** and the **Indian Pitta** (*Pitta brachyura*) have been recorded on lawns, presumably in search of worms. There are further records of pittas foraging where wild pigs had churned up the soil, and in the nest mounds of a scrubfowl (*Megapodius*). A captive Hooded Pitta (*P. sordida*) was recorded digging in soft soil for earthworms, and it seems likely that wild pittas also do this.*

[*Pitta iris*, Howard Springs, Darwin, Australia. Photo: Martin Hale]



"yeeaaach" call, the Banded Pitta emits a "krrr", and the Rusty-naped Pitta utters a "tchick" note.

### Food and Feeding

Earthworms (Annelida), when available, are probably the food items taken most frequently by pittas, although, in the dry season, the worms move deeper into the soil and thus become inaccessible. Snails are also a common food of the members of the family. Otherwise, the diet is composed predominantly of a variety of invertebrates, such as termites (Isoptera), ants, Orthoptera, beetles, bugs (Hemiptera), lepidopterans, centipedes (Chilopoda) and spiders, which the pittas come across in the leaf litter, but small skinks (Scincidae), snakes, lizards and frogs have also been reported. A number of species, including Schneider's Pitta, the Indian Pitta, the Garnet Pitta and the Noisy Pitta, are known to consume vegetable food on occasion. Further, the Rainbow Pitta takes fruit from *Carpentaria* palms, and a Red-bellied Pitta is reported to have taken newly planted seeds of maize (*Zea mays*).

Pittas feed in a thrush-like manner in the darkness of the forest floor, brushing or sweeping aside dead leaves with sideways motions of the bill. Typically, the two sexes of a pair feed in loose association with each other, separated by distances of 5-30 m; it seems probable that the act of keeping somewhat apart helps to avoid the risk that one individual's potential prey will be disturbed by its partner. Two species, the Indian Pitta and the Rainbow Pitta, have been observed feeding quite openly on lawns in town parks, where they were probably taking earthworms.

As long ago as 1934, J. Delacour described the way in which a captive Hooded Pitta sought worms by digging with its bill into the soft earth. Since that time, numerous observers have reported seeing pittas with an earth-soiled bill. The suggestion that these birds may be able to locate prey by smell is supported by a study of the olfactory system undertaken by B. G. Bang and S. Cobb, who found that an Indian Pitta had the largest olfactory ratio among 25 different species of Passeriformes which they examined.

Besides having a keen sense of smell, the pittas are notable for their use of inanimate objects in the environment. Eight members of this family have been recorded as utilizing a stone as an "anvil" on which to smash snail shells, and it is likely that this behaviour, which is very like that of the widespread Song Thrush

(*Turdus philomelos*) in the Palearctic, is practised by more pitta species. The Rainbow Pitta employs a branch or root for the same purpose.

Several authors have cited a published report in which it is stated that a captive Hooded Pitta ate approximately its own weight in food every day. This claim does, however, seem very unlikely and is not supported by other studies. Observations of a captive Fairy Pitta, for example, revealed that, during a period of 51 days, it consumed only about 10% of its body weight per day. Moreover, a study in Borneo found that wild-living Garnet Pittas consumed about 30% of their own weight every day. Bearing in mind the more sedate lifestyle of captive birds, it is probable that the daily amount of food consumed by most species of pitta is in the region of 15% to 30% of the body weight.

### Breeding

Pittas are monogamous, with both parents caring for the young, a breeding system shared with about 90% of all avian species. They are solitary breeders, and defend their territories against intruders. Extra-pair copulation has never been reported for this family, despite two decades of DNA analysis in which it has been shown to be common among many monogamous birds. Several of the rarer species exist at such low densities that extra-pair copulation is not likely to take place, although it would not be surprising if future research revealed this behaviour to occur in areas where pitta populations are dense.

Information on breeding biology, some of this derived mainly from captive birds, exists for 27 of the 30 members of the family. The nest and eggs of Schneider's, Azure-breasted and Whiskered Pittas have never been found. In the case of the last of those three, however, the local inhabitants of the Philippine island of Luzon, to which this pitta is confined, report that the species lays its eggs in February in a nest which is situated either on the ground or low down in a bush.

The breeding season is typically synchronized with the onset of the rainy season. The Superb Pitta, confined to Manus, in the Admiralty Islands, is presumably an exception, because rainfall on the island is distributed evenly throughout the year; as a result, other bird species living on Manus breed in all months of the year, except during the period when they are moulting. There

The **African Pitta** tends to forage in shade, standing motionless in the leaf litter, especially near ant and termite mounds, and watching for prey, sometimes after sweeping leaves aside; it may then move to a new site 1-2 m away. If prey is spotted, the bird lunges forward to seize the item in its bill.

Pittas have been observed to leap up to snatch flying termites or to take a spider from its web in similar fashion.

Examination of the olfactory system indicated that pittas are able to locate prey by smell. Snails are regularly eaten by many species, the shells being smashed on a stone "anvil" or on a root or branch.

[*Pitta angolensis pulih*,  
15 km from Oban,  
east Nigeria.  
Photo: A. P. Leventis]







Pittas take a wide range of invertebrate prey, mainly adult and larval insects, earthworms, snails and slugs, but also other molluscs, crustaceans, spiders, centipedes and millipedes. Insects consumed include crickets, bugs, cockroaches, termites, butterflies and moths, flies, ants and beetles. Small numbers of vertebrates are also eaten, including lizards, snakes, frogs and "field mice". The Indian Pitta (*Pitta brachyura*) commonly takes beetle larvae from manure and fly maggots from human faeces when foraging near villages. Vegetable matter has been recorded in the diet of certain pitta species, for instance green plants, seeds, berries and fruit. It has, however, been suggested that any fruit taken from the ground is ingested primarily because it is infested with adult or larval insects. Little is known of the diet of wild **Fairy Pittas**, but a captive bird took ground beetles (Carabidae) up to 25 mm in length, while persistently ignoring one 40 mm long.

[*Pitta nympha*,  
Shi-Men Dam,  
Tao-Yuan, Taiwan.  
Photo: Huang Win-shing]

are several reasons why the vast majority of pitta species time their breeding activities to coincide with the wet season. Arthropod abundance usually increases a week or two after the stimulus provided by a fall of rain, and earthworms, which are the most important food items for pitta chicks, are easier to find after rain. In addition, the vegetation becomes denser during the wet season, thereby offering more protection and camouflage for the nest and young.

Relatively little is known about the breeding displays of the pittas. What is perhaps the most interesting behaviour in this respect has been recorded in Africa. At the beginning of the breeding season, the African Pitta perches on a more or less horizontal branch, some 5 m or so above the ground, from where it jumps about 25-40 cm into the air, fluffing out the red belly feathers as it does so, before parachuting down to the branch again. During this display, in which the bird performs two or three jumps per minute, or sometimes more, it produces a curious, partly mechanical sound which could be transcribed as "prrrouut". Between bouts of displaying, the pitta will fluff out the feathers of its underparts and swing sideways. No similar breeding displays have been recorded for any other members of the family.

Courtship behaviour remains very poorly known, although some displays related to this stage of the breeding cycle have been described for Hooded Pittas in captivity. After the male had chased the female around for some length of time, both of the adults, while standing on the ground, stretched up to their maximum height and then relaxed back into the normal posture, whereupon they bobbed the tail up and down while uttering a growling call. In addition, the male often crouched low while growling, and at times one of the pittas would perform wing-flicking movements while standing in front of its mate.

According to the available information, special pre-copulatory behaviour is virtually non-existent. An exception is provided by the Noisy Pitta, the female of which has been watched as she picked up some debris from the forest floor and hopped around while holding it in her bill; when the male appeared and chased her, she then stopped, and copulation followed.

Pittas are not accomplished nest-builders. In fact, they usually put together only a skimpy structure, which is very difficult to remove without causing it damage. Nest structure is one of the most uniform features within the pitta family. All those species for which the relevant information exists construct a nest resembling a flattened dome, with a side entrance. In most



cases, the nest is the size of a rugby football, and it is built very loosely, such that it is very difficult to recognize as it looks very like an agglomeration of plant remnants blown together by the wind. Several fieldworkers have reported the finding of old-looking nests parts of which have fallen off, or with the entrance hole doubled in size, yet still containing a sitting pitta. Some species, such as the Noisy Pitta, add a platform or "door-mat" of sticks, often decorated with mammal dung, at the base of the entrance hole.

The nest is often well camouflaged among vines or other vegetation, and is frequently made from the same materials as those of the surroundings, although the Blue Pitta will fly long distances in order to obtain bamboo leaves for the nest. It is usually composed of dead and skeletonized leaves, sticks, mosses and grasses, the whole structure being held together with plant fibres and fine roots. The interior cavity is lined with finer material, such as root and plant fibres, forming a neater nest cup.

Some of the Pittidae place the nest on the ground, among tree roots or fallen branches or on a dead stump, while others choose to locate it at a higher level, in the cleft or the forked branches of a tree. Many species, however, demonstrate wide individual variation in nest placement. The two African species always build in bushes or trees, suggesting that terrestrial predators are a greater problem in the Afrotropics than elsewhere. Nests situated on the ground tend to suffer greater predation than do those placed in trees or bushes, and the sitting bird, as well as the eggs and chicks, is at risk of being taken. The flexibility in nest placement shown by many pittas may mean that they are able facultatively to switch their nesting habits to adapt to the presence of an introduced terrestrial predator.

Both sexes participate in the building of the nest, but the male is often the principal labourer. Typically, the work requires two to eight days, the total time perhaps depending on the age and experience of the individual birds concerned. A new nest is probably built for each brood-rearing attempt.

Clutch size varies considerably among the members of the family. Increased predation may select for smaller brood size, as a greater concentration of helpless or inexperienced young may attract predators through their vocalizations, as also would the more frequent provisioning visits by the parents. In terms of energy expenditure, a small clutch is also less costly to replace af-

ter predation than is a bigger one. The most common clutch size is three to five eggs, but the number varies from two, as in the case of the Garnet Pitta, to up to six, as in the Blue-winged and Indian Pittas.

A female Rainbow Pitta collected by a scientist was subsequently found to have two eggs in her oviduct. This is a remarkable event, and one which must be extremely rare among birds. Clearly, it involves the not insignificant risk that the eggs, squashed together into a small space, will break, which would have fatal consequences for the female.

Pitta eggs are broadly ovoid, with one end slightly pointed. The surface is generally smooth, the only exception being the deeply pitted eggs of the Superb Pitta. The eggs are often faintly glossy, although this varies within and between clutches. The ground colour is creamy white to whitish, this being marked with spots, dots, hieroglyphic-like markings, scrolls and streaks of dark brown, red-brown, pale brown and black and with diagnostic greyish-lilac to greyish underlying markings. Eggs vary in size according to the size of the species. Those of the little Garnet Pitta are  $28 \times 20$  mm, whereas the two largest species, the Ivory-breasted and Giant Pittas, lay eggs which measure, respectively,  $33 \times 27$  mm and  $32 \times 26$  mm.

Interestingly, the eggs of the Noisy Pitta in Australia are smaller in the north of the range than in the south, averaging  $30 \times 24$  mm in size in Queensland and  $33 \times 25$  mm in New South Wales. In addition, populations north of the Connors Range, in Queensland, most commonly lay three eggs, while those to the south of there normally lay clutches of four eggs. This regional difference in clutch size may be associated with the scarcity of food resources in humid tropical rainforest and the shorter feeding hours available there.

Shared incubation is the rule among the Pittidae. The incubation period is typically 14-16 days, but a period of 15-18 days is recorded for Noisy Pittas. Hatching is usually asynchronous, over a couple of days, but both the Hooded Pitta and Gurney's Pitta have been reported as hatching a whole clutch in a single day. At one closely watched nest of the very rare Gurney's Pitta, the observer noted that all four eggs hatched within a period of less than eight hours; the adults then swallowed the eggshells in their entirety, thereby assimilating the calcium which they contain. It is not known whether the eating of the shells of hatched eggs

Typically, both sexes of a pitta pair collect material and help to build the nest, which takes 2-8 days for completion. Sticks gathered by this lovely blue-backed male **Giant Pitta** will be used to build a platform base for the nest and combined with dead leaves to construct the outer covering. Pitta nests are rather simple structures, loosely held together and lined with plant fibres and fine roots.

Nests are often well concealed through having a roof of moss, larger leaves and other material from the immediate vicinity. A platform of twigs by the entrance hole has been reported for several pitta species.

[*Pitta caerulea*.  
Photo: I. R. Beames/  
Ardea]







The characteristic globular nest of pittas, with a side entrance, is often hidden among vines, roots or fallen branches, by a dead stump, or higher up in a cleft or fork. That of the **Banded Pitta** is usually placed 2-3 m above the ground. The entrance may be, as here, at an angle, so there is no obvious roof, though some also collapse while still occupied. Pittas lay 3-5 (occasionally 2-6) creamy white eggs with a variety of dark markings. The eggs are incubated by both sexes for 14-16 days, the young hatching asynchronously over a couple of days. The adult sits tightly on its nest, seldom leaving at the approach of a human until almost trodden on!

[*Pitta guajana irena*.  
Photo: Frank W. Lane/  
FLPA]

occurs among other members of the family, but the behaviour is certainly a well-known phenomenon in the avian world in general. The eggs of a Giant Pitta which was kept in captivity hatched 12 hours after the first signs of pipping.

The nestlings are born naked and blind, and are entirely dependent on their parents for food, warmth and general care. Newly hatched Banded Pitta chicks are reported to have a grey down, which is lost after only three days. Biparental care continues after hatching, but rather little detailed information is available for this stage of the breeding cycle. In the case of Gurney's Pitta, the female broods the chicks at night and the male assists with duties during the daytime. After three days, brooding by day becomes less continuous, and the adults appear to cease brooding alto-

gether once the young reach eight or nine days of age. On the other hand, a female Giant Pitta continued to sit with her offspring at night until two days before they fledged, perhaps because of frequent visits by snakes. A captive female Banded Pitta spent most of her time in the nest during the nestlings' first five days. During the early stages of the chicks' development their droppings are enclosed in a gelatinous faecal sac, which the parents, after having fed the brood, remove and carry some distance away from the nest.

At a nest of Hooded Pittas studied in New Guinea, provisioning visits were made, on average, every 14.6 minutes by the male parent and every 18 minutes by the female. During the brood-feeding stage, one pair of Gurney's Pittas made some 2399 visits to the nest, travelling an estimated total distance of 460 km over a period of 15 days. Observations of Gurney's and Giant Pittas have revealed that even moderate rainfall does not disrupt the parents' regular feeding rhythm.

As breeding often coincides with the beginning of the wet season, earthworms are the most frequent food items brought to the nestlings. For example, worms were delivered in 46 of 63 feeding visits by a pair of Gurney's Pitta. In a recent study investigating the importance of feeding ecology to the breeding success of Eurasian Blackbirds, D. E. Chamberlain and others demonstrated that both provisioning rates and nestling weights were marginally higher when the chicks were fed on a diet consisting predominantly of earthworms. This affords support for the presumption that worms also have a high nutritive value for pittas. When the chicks are small, the parents chop the earthworms into small pieces before feeding them to the brood.

Although earthworms can appear to form up to almost 80% of the nestlings' diet, this could be merely a reflection of the fact that such worms are more easily identifiable than are most other food items, especially small ones. Adult pittas do, in fact, feed their young with a variety of foods, including various insects, grubs, snails, centipedes and spiders. Leeches are among the items reported to have been fed to young Noisy Pittas, and small frogs were brought to chicks of Gurney's Pitta.

The young develop and grow rapidly, with fledging occurring at an age of 15-17 days. Earlier fledging has been reported, but this is probably the result of the young leaving the nest in order to avoid predators or intrusive observers. Such youngsters,



The breeding biology of the **Bar-bellied Pitta** has not been well studied, but both sexes are known to build the nest, and both also share in incubation, as can be seen here with the female about to take over from her mate. No changeover ceremony has been described for this species. During observations of a pair of Noisy Pittas (*Pitta versicolor*), the incoming bird, usually bringing soft material to add to the nest, would call from some distance, causing its mate to leave.

[*Pitta elliotii*,  
Kon Ha Nung,  
Gia Lai-Kon Tum,  
Vietnam.  
Photo: Frank G. Rozendaal]



often only two-thirds the size of an adult, can fly short distances, but they are not able to gain height and must, therefore, rely on their well-developed legs if they need to escape from potential predators. Very little is known about the period of post-fledging dependency, but it seems likely in most cases, at least, to be no more than about ten days and, in some cases perhaps, shorter. The fledglings of the Banded Pitta, for example, are independent at an age of 22-24 days, but a brood of young in captivity began to take food for themselves when only 19 days old, just four days after leaving the nest.

Nest failure is frequently reported. Of a total of 14 eggs in four Gurney's Pitta nests, two were infertile and four were preyed upon; from the eight eggs which hatched, three chicks were taken by predators and only five survived to the fledging stage. Unfortunately, it was not possible to monitor the fortunes of the five fledglings during the first vulnerable weeks of independence. Although there are no complete breeding-success statistics for any members of the Pittidae, the small clutch size of most species suggests that, as with most tropical birds, nesting success is low, in this case due to heavy predation. The most serious predators during the breeding season are snakes, which probably take a heavy toll of, especially, eggs and nestlings. For example, the Superb Pitta on the island of Manus suffers heavy predation by the ground boa (*Candoica aspera*) and the brown tree snake (*Boiga irregularis*). Birds which are confined to small islands are frequently subject to serious predation by introduced animals. The rarity of the Black-faced Pitta, another threatened species with a limited range, which consists of Bougainville and two islands in the adjacent Solomons, is said to be due largely to the presence of introduced mammals such as cats (but see Status and Conservation).

It is well established that birds living in rainforest lay fewer eggs in each clutch than do their relatives which inhabit cooler regions, although this is compensated for by greater longevity. The oldest pitta recorded in the wild was a Blue-winged Pitta, which was recaptured 67 months after it had first been trapped. Two Hooded Pittas were recaptured 30 and 38 months, respectively, after they had been ringed. Otherwise, a pair of Giant Pittas which was kept in captivity in San Antonio Zoo lived for more than 12 years.

## Movements

Most pittas are sedentary, even at high altitudes, although some post-breeding dispersal does take place. Because many species are normally silent outside the breeding season, some, such as

Gurney's Pitta, were formerly thought to be migrants. As they were not heard during the period when they were not breeding, it was assumed that they had left the area.

Only four species are true migrants. These are the African Pitta, the Indian Pitta, the Fairy Pitta and the Blue-winged Pitta. Most of the populations of these four undertake regular annual migrations in which they cover moderate to long distances. In South-east Asia, the northern populations of the subspecies *cucullata* of the Hooded Pitta is also a true migrant, while populations of the Blue Pitta in north-east India and Bangladesh appear to make local seasonal movements. In Australia, some Noisy Pittas from north Queensland, after nesting, move northwards to spend the non-breeding season on islands in the Torres Strait and in southern New Guinea. The only other pitta which is known to undertake migratory movements on a noteworthy scale and with some regularity is the Red-bellied Pitta in the Philippines, New Guinea and Australia's Cape York Peninsula; these movements, however, are little understood and are perhaps best described as nomadic.

In addition, the subspecies *elegans* and *vigorsii* of the Elegant Pitta probably make some inter-island movements, a supposition based on their apparent absence from the known breeding islands for some months and their pointed wingtips. Any such migrations, however, remain undocumented.

Understanding of pitta migrations is generally poor. As with most other tropical passerines, frustratingly few recoveries of ringed birds exist. For example, of 2000 Red-bellied Pittas caught and ringed at Dalton Pass, in Luzon, the northernmost island of the Philippines, only ten produced recoveries: nine individuals were retrapped at the same site up to two months later, and one was captured 36 months later, when it had moved 48 km to the south-east.

Migration appears to be always nocturnal, making direct study of the movements of these birds still more difficult. Nevertheless, the migrant pitta species are, with the exception of the Fairy Pitta, very abundant, and many reports of large "falls" of Hooded Pittas, Blue-winged Pittas and African Pittas exist. From these documented accounts, it seems likely that pittas migrate in loose flocks and use the same resting and foraging places year after year, with little variation in the annual timing of movements.

There are a few long-distance migrants in the family. In the Afrotropics, the subspecies *longipennis* of the African Pitta travels as much as 2000 km between breeding and non-breeding areas, and there are numerous reports of this species fluttering at or striking window panes at night. The Indian Pitta migrates from the sub-Himalayas to southern India and Sri Lanka, while the northern

Pitta nestlings hatch naked, blind and helpless, but they rapidly acquire a sparse covering of down. These **Blue Pitta** nestlings show their striking yellow and orange gapes as they beg for food from the male parent. The young are cared for and fed by both sexes. Nestlings of Gurney's Pitta (*Pitta gurneyi*) are brooded for 8-9 days, by the female at night, but with the male doing some during the day. Young pittas develop rapidly, fledging at 15-17 days, and post-fledging care probably lasts about ten days.



[*Pitta cyanea cyanea*,  
Khao Yai National Park,  
Thailand.  
Photo: Uthai Treesucon]





The beautifully coloured **Noisy Pitta**, the commonest pitta in Australia, is found in the country's eastern rainforests.

This individual, its bill packed with earthworms, shows conspicuous white wing patches as it flies to its nest, probably concealed among tree roots. Both parents share in the feeding of the young, and one male was recorded feeding his female on the nest after the second egg had hatched; each adult used its own route and lookout perch when approaching the nest; towards the end of the fledging period, the young were especially vocal upon the arrival of a parent. These birds foraged close to the nest-site initially, but further away and independently, when collecting food for their offspring.

[*Pitta versicolor versicolor*, Lamington National Park, Queensland, Australia. Photo: Glen Threlfo/ Auscape]

populations of the Blue-winged Pitta in southern Myanmar and Thailand "leap-frog" more southerly ones and migrate all the way to Sumatra and Borneo. The latter species is prone to vagrancy, with, for example, two records from north-west Australia, one from Christmas Island, south of Java, and two from the Philippines, although those from Australia have been disputed.

One of the least understood long-distance migrants is the Fairy Pitta, the breeding range of which extends from southern Korea and Japan in the north to eastern China and Taiwan in the south. The supposed main wintering range lies in northern Borneo, but the route taken by migrants remains a mystery. There are two main possibilities. Fairy Pittas breeding in the south-western part of the range, in China, may fly through Vietnam and then make the 1000-km sea crossing direct to Borneo. Those from Korea and Japan may cross the East China Sea to Taiwan, a distance of about 1100 km, and from there continue on over the 350 km or so of water to Luzon, and then across the Philippines to Borneo. Evidence that the first route is used, at least on the return migration in spring, derives from a few birds observed in north and central Annam, east Tonkin and Hong Kong, mostly in April. In favour of the latter route are data from the 1980s, when hundreds of these pittas were caught each spring on Taiwan. Fifteen males collected on the island in May ranged in weight from 67.5 g to 155 g, and the fact that some were thus more than twice as heavy as others suggests fat deposition for a transoceanic flight. On the other hand, the Fairy Pitta has never been recorded in the Philippines. To confuse matters even further, the biometrics of individuals collected near Shanghai, on the Chinese east coast, suggested that these birds originated from Korea and Japan, while eight specimens in Borneo appeared to be from southern China. It may be that this species follows two distinct flyways, or perhaps that it makes an autumn migration across the continental mainland and on to Borneo, and takes a more direct return route in spring, when migrating birds are known to make fewer stops and are therefore more difficult to trace. This is an interesting subject for study, and one in which the radio-tracking of even a small number of individuals could provide very useful data.

Most pitta species have no well-defined pattern of migration, but will make local movements, perhaps in response to

food shortage or habitat change, and undertake short-distance post-breeding dispersal. The southern population of the Noisy Pitta performs some east-west and altitudinal movements, and it is likely that similar shifts occur among several other members of the family.

Differential migration has been reported for two species. The 15 Fairy Pittas on Taiwan, mentioned above, were, as stated, all males, and, of eleven Hooded Pittas of the subspecies *cucullata* caught in November-December in the Strait of Malacca, ten were females. Interestingly, separation of the sexes outside the breeding season has been recorded for a non-migratory species, the Banded Pitta, in Java and Borneo.

### *Relationship with Man*

The brilliant colours of the members of the family Pittidae have, in the past, made these beautiful birds highly desired subjects for aviculture. Delacour, in 1934, was the first to breed pittas in captivity, and his success was a great sensation at the time. Pittas are very difficult to breed; they require large aviaries with high humidity and good vegetation, conditions which in normal circumstances, because of the costs involved, only large zoos are able to provide. In addition, pittas are by nature very pugnacious, and it is therefore difficult to find other bird species with which they can live peacefully. This is probably the main reason why pittas are so rarely kept in private collections today.

A well-known colloquial name for the Pittidae is "jewel-thrushes", and this term aptly sums up the spectacularly beautiful appearance of these birds. In much of the family's range, the keeping of birds as pets is a common practice. Naturally, such striking birds as the pittas are very popular, but, since they are primarily insectivores or worm-eaters, they are not easy to keep as pets. Nevertheless, their natural beauty has sometimes made them irresistible. In Borneo, for example, children were once quite happy to retain a pitta, or even just a part of it, once the bird had died; the dead bird would become a favourite toy. Various other colloquial names have been applied to these handsome birds. In Australia, for example, the Noisy Pitta is some-





Virtually all pitta species time their breeding to coincide with the start of the rainy season, the latter encouraging the growth of denser vegetation which, in turn, will better camouflage and protect the nest and young.

The moisture also stimulates the activity of various prey items, notably earthworms, and makes them easier to obtain. For several species, including the **Noisy Pitta**, earthworms are the commonest item fed to the young. In a pair of closely observed Gurney's Pittas (*Pitta gurneyi*), of 63 feeding visits 46 were with worms!

In the early stages of feeding, one pair of Noisy Pittas smashed the worms into small segments on a rock before feeding them to the young; at a later stage, worms were chopped into short pieces.

Its bill crammed with looped worms, this bird recalls a thrush, such as the Eurasian Blackbird (*Turdus merula*), bringing a similar bundle to its nestlings. The typical domed nest seen here, looking like a spherical accumulation of forest debris, is more compactly built than some, appearing to be quite tightly bound together with thin roots.

[*Pitta versicolor*,  
Queensland, Australia.  
Photos: R. Brown/  
Oxford Scientific Films]





The only Australian pitta with black underparts, the brilliant **Rainbow Pitta** has two different and disjunct populations in the north of the country's Northern Territory.

This species inhabits mainly monsoon rainforest, but also mixed forest with the tree *Lophostemon lactifluus* dominant. As seen here, some nests of the Rainbow Pitta are more open, lacking the hood characteristic of other species' nests.

The importance of sticks for the construction and the lining of fine rootlets is obvious. Nests of the Noisy Pitta (*Pitta versicolor*) also have a small twig platform or ramp ("doormat") below the entrance, and the birds sometimes spread this and the inside of the nest with animal dung or mud; similar behaviour has been recorded for the Rainbow Pitta. While one chick is being fed, its siblings continue to gape, and in the end all do so, seemingly insatiable, while the parent lingers. The young will grow rapidly over a nestling period of 14-15 days, being fed by the parents on a diet of worms, snails, insects, and the like. At one nest of the Hooded Pitta (*P. sordida*) in New Guinea, provisioning visits by the male took place every 14-6 minutes, and those by the female every 18 minutes. As an anti-predator strategy, young Hooded Pittas are known to face the inside of the nest, their spiny quills bristling out towards the entrance in defence, while nestlings of other species will crouch and freeze in the nest if threatened.

[Pitta iris iris,  
Darwin,  
Northern Territory,  
Australia.  
Photos: Stanley Breeden/  
DRK]



Both sexes of the widely distributed **Hooded Pitta** share nesting duties, though the female may do most of the incubating and brooding. After a feed, the adults will carry away the faecal sacs of the nestlings and discard them at some distance from the nest. A captive male Banded Pitta (*Pitta guajana*) fed the young alone during the first six days, and collected such faecal sacs from the female. There are also two observations of a male Gurney's Pitta (*P. gurneyi*) swallowing part of a faecal sac. Maintaining nest hygiene in this way is clearly essential if the birds are to avoid parasite infestations.

[*Pitta sordida novaeguineae*,  
Brown River,  
south-east New Guinea.  
Photo: Brian J. Coates]



times referred to as the "painted thrush", "anvil-bird", "bob-tail" and "dragoonbird".

Some species are still caught for the pet and for the cagebird trade. Every year, throughout India, thousands of Indian Pittas are captured while on migration. By placing snares in openings of bushes through which the birds fly, a single experienced hunter is said to be able to catch up to 50 birds within a few hours, using only five to eight nooses. At Dalton Pass, an important flyway in the mountains of Luzon, in the Philippines, migrating Red-bellied Pittas are trapped annually at night by local people using lights, mist-nets and decoys; the exact numbers of pittas involved are not known, but in 1989 and 1990 67 bird-catchers, when asked how many birds they took in a single season, gave an estimated figure of 336,000 individuals of 97 different species. As in India, most were used as food, and some were sold alive to pet shops and markets.

Since pittas, because of their elusive behaviour, are not easy to collect, scientific expeditions have often procured them from local people, who use snares or take the sitting birds on the nest. In the presence of humans, all members of the family are as a rule shy and skulking, but it is nevertheless possible to observe a pitta from only a few metres if the observer remains quiet and still.

A good number of pitta species have been named after the discoverer or in honour of a person. This is reflected in the scientific specific names of as many as nine of the 30 members of the family. The Eared Pitta, whose scientific name is *phayrei*, was named after Lieutenant General Sir Arthur Purves Phayre, who was Commander of the British forces in Burma, now known as Myanmar, between 1862 and 1867. Eugene Oates, a civil servant in India who wrote two volumes of the famous *Fauna of British India* in 1889, had the Rusty-naped Pitta named after him. Schneider's Pitta immortalizes the Swiss taxidermist Gustav Schneider, who collected the first specimens of this species in Sumatra, in the late 1890s; the taxon was subsequently described by E. Hartert, in 1909. Elliot, who wrote the first monograph of the Pittidae, in 1863, was honoured eleven years later when a new species of pitta was named after him, subsequent to which he produced a revised and enlarged second edition of his book. J. H. Gurney, a nineteenth-century English ornithologist, collector and banker, is remembered through the attractive but greatly

threatened species which bears his name, while J. C. Baud, an official of the Dutch East India Company whose life spanned the eighteenth and nineteenth centuries, had the Blue-headed Pitta named after him. The German ornithologist A. Reichenow, who wrote *Die Vögel Afrikas* in the first five years of the 1900s, has given his name to numerous species and subspecies, one of these being the Green-breasted Pitta. The Azure-breasted Pitta commemorates J. B. Steere, who collected the first specimens of this pitta on his two expeditions to the Philippines in the second half of the nineteenth century. The last of the nine eponymous pittas is the Whiskered Pitta, named after Gottlieb von Koch, who was director and taxidermist of the Natural History Museum in Darmstadt, Germany, during the latter part of the nineteenth and the early twentieth centuries.

## Status and Conservation

Rainforest, which formerly occurred in extensive tracts in tropical regions, has been relegated by human activity to a point where it now covers only 7% of the earth's surface, yet it still contains more than half of all plant and animal species known to man. Logging and forest-burning are common in most areas where pittas occur, but few data are available on the effects which these activities have upon pitta communities.

One example is Schneider's Pitta, first discovered in Sumatra between 1897 and 1899, as mentioned above. Up to 1924 it was seen, and specimens were collected, by several expeditions at altitudes of between 900 m and 2200 m, the majority below 1400 m. The species was reported to be common. After one was shot in 1936, however, nobody succeeded in seeing a Schneider's Pitta during the following 52 years, and most authors considered this pitta to be possibly extinct. Then, in 1988, P. Hurrell located a male, and on the following morning a pair, near the summit of Mount Kerinci, at an altitude of 2375 m. A few individuals have since been reported, all at high elevations. It seems likely that illegal slash-and-burn agriculture has destroyed much of this species' habitat at lower altitude, forcing it to retreat to higher levels. Schneider's Pitta has now been found in the Kerinci-Seblat National Park, a large area covering 15,000 km<sup>2</sup>, as well as in the Bukit Dingin/Gunung Dempo





Although no pitta species has become extinct in historical times, nine are currently listed as globally threatened. Probably the world's most threatened habitat and that with the greatest biodiversity, is lowland rainforest, which continues to vanish at an extremely alarming rate. Rainforest is the haunt of many pitta species, and there is no doubt that habitat loss resulting from a huge human population increase and associated changes to the environment has been the main cause of catastrophic declines in many pitta populations. Also of great concern is the lack of basic biological knowledge for a number of species, which could mean that they might be wiped out before they have even been studied. This includes the need for more taxonomic investigations, which may well lead to the recognition as full species of taxa currently held to be "only" subspecies, and this in turn probably means a better chance of encouraging conservation interest and activity in the taxa in question. The general threats of pesticides and introduced mammalian predators have yet to be positively identified as serious problems for pittas, while their trapping for food is likely to be of greater significance than that for the trade in live birds. The best solution to counteract declines seems to be the establishment of more national parks and reserves, as long as these are correctly located and managed, the involvement of local people being crucial to that end. The exquisite **Garnet Pitta** inhabits tall lowland rainforest, including the older stages of regeneration. It thus tolerates some habitat interference and is still locally common in some parts, but the alarming plight facing most of the forest within its range justifies its current listing as Near-threatened.

[*Pitta granatina granatina*,  
Lanjak-Entimau  
Wildlife Sanctuary,  
Sarawak, Borneo.  
Photo: Doug Wechsler/  
VIREO]



Classified as Vulnerable, the **Blue-headed Pitta** is restricted to Borneo, where it favours dense cover in primary and regenerating, selectively logged, lowland evergreen forest, particularly near rivers. Such forest is still relatively extensive in Borneo, but large areas of the species's habitat have disappeared owing to commercial logging, uncontrolled fires and drought, and it is likely that this pitta is suffering a rapid and continuing decline. It occurs in several protected areas, but these need to be effectively and properly controlled if all their wildlife riches are to be preserved and the Blue-headed Pitta is not to slump to the category of Endangered.

[*Pitta baidii*,  
Lanjak-Entimau Wildlife  
Sanctuary,  
Sarawak, Borneo.  
Photo: Doug Wechsler/  
VIREO]



Protection Forest, and it has been heard at Berestagi. It is likely that habitat at such altitudes is suboptimal for the species, and there is little doubt that it remains a very rare species, surviving only because of its apparent ability to adapt sufficiently well to conditions at higher altitudes.

Another species on the brink of extinction is Gurney's Pitta. Unlike Schneider's Pitta, this species seems dependent on lowland rainforest below 160 m in elevation, which limits its range in south Thailand to one of the last significant fragments of lowland forest, at Khao Nor Chuchi, in the province of Krabi. As in the case of Schneider's Pitta in Sumatra, the explosion of the human population is the most serious threat for the future of this attractive species. In Thailand, the human population increased by nearly 300% between 1945 and 1980, which has naturally raised the need for more agricultural areas. Gurney's Pitta was rediscovered in 1986, following a hint from a bird-dealer, after it had not been seen in the wild for 34 years and had only rarely been found in the cagebird markets. It was two ornithologists, P. D. Round and U. Treesucon, who located the first breeding pair. They have since studied the species intensively and, after having acquired the basic knowledge of its biology, began to stress the urgent need for conservation of the pitta's habitat.

Because several thousand human families live in and around the range of Gurney's Pitta and obtain their livelihood from the forest, it was necessary to think in new ways. A non-hunting area was already established a year after the species' rediscovery, and its status was upgraded to that of a wildlife sanctuary in 1993. Unfortunately, most of the known pairs of Gurney's Pittas were breeding outside the protected area, where the majority of the rural human population lived, and the government therefore made it a National Reserve Forest. With the support of many conservation organizations, the Khao Nor Chuchi Lowland Forest Project, co-ordinated by the Centre for Wildlife Research in Mahidol University, was started. The first target was to obtain support from local people through offering them direct participation and an interest in the future protection of the forest. This was effected by providing financial incentives for conservation, and by demonstrating to the human inhabitants ways in which they could exploit the forest in a more sympathetic manner while at the same time trying to increase their sparse income.

A Gurney's Pitta School Fund was set up, which provided educational materials for the schoolchildren, and arranged courses and conservation camps. In addition, a silvicultural programme was carried out, involving the reforestation of previously cleared areas with native trees. By 1990, more than 60,000 trees and palms had been propagated and planted, some in rubber plantations, where a rich undergrowth is not an economic problem but does benefit Gurney's Pittas, which have now been recorded breeding there several times, especially in the spiny palms. To facilitate dispersal of the pittas, trees were also planted in such places as along watercourses, thereby creating "corridors" between scattered forest patches. Fish ponds were built, and the artificial breeding of chickens, ducks, pigs and frogs was established, in order to remove the people's need to hunt animals in the forest. Further, the growing of vegetables and fruit was initiated. To finance all this costly work, a bank was opened where the farmers could borrow money on favourable terms.

Moreover, as a means of protecting the area from the activities of poachers, personnel from the Royal Forest Department were provided with vehicles, special headquarters, guard posts and an information centre. The increasing international interest in Gurney's Pitta and in the project itself finally resulted in the building of accommodation for tourists in the village of Ban Bang Tieo, which is situated in the centre of the pitta's range, and even a village meeting hall was established. Additional revenue was made available through various local handicrafts, using local materials, which were organized so as to offer souvenirs for the tourists.

One of the latest efforts has been the production of a detailed and comprehensive land-use and forest-cover map for the area. All homesteads and clearings are mapped, with the owners' names, so that new, illegal, clearings can be detected, and the protected forest has been demarcated with signs at 100-m intervals. Since 1998, the local radio station has broadcast twice-monthly features on the project, and a one-hour film shot in Khao Nor Chuchi has been shown in both the Thai and the English languages on the national Thai Television.

The entire project has been financed by a grant of US\$1,500,000 made on behalf of DANCED by the Danish Ornithological Society and BirdLife Denmark.





Despite the fact that a part of the forest was designated as a wildlife sanctuary, and the rest protected at a lower level, new clearings have nevertheless continued to be established every year. The response from the Thai government has been rather disappointing, and this is especially the case with the Royal Forest Department, which has a responsibility to protect forest inside wildlife sanctuaries. Many officials, however, appear to be engaged more in building their own power base, and from a political point of view there are, sadly, very few votes to be gained in protecting a little bird. To add to these difficulties, there has been a growing shift in agricultural practice from rubber plantations to the more profitable oil palm (*Elaeis guineensis*), in which all undergrowth is bulldozed or blasted from the soil surface. Moreover, the ecotourism programme has not been a success. Income for villagers owning accommodation for the tourists has been very meagre, because most visitors have preferred to sleep elsewhere.

Since over a decade has passed since the project was first set up, it has to be asked how much this huge expenditure of manpower and money has influenced the survival of Gurney's Pitta. Following estimates of about 45 pairs in 1986 and 40 pairs in 1988, a survey in May 2000 resulted in ten pairs being located and two nests being found. There is little argument that the primary cause of this decline continues to be loss of habitat. Furthermore, disturbance by visiting birdwatchers eager to have the species on their lists, and who fail to observe the basic guidelines for proper behaviour within the forest environment, has become a potentially serious problem in more recent years.

Perhaps rather surprisingly, no programme of captive-breeding of the species has yet been planned or organized. All efforts have, maybe understandably, been concentrated on saving the habitat, since this pitta is now confined to a single area of lowland rainforest no more than about 50 km<sup>2</sup> in extent. The breeding of pittas in captivity has generally been found to be a rather difficult task, but in a recent paper published in *Avicultural Magazine* D. Rinke, the director of Vogelpark Walsrode, in Germany, and his colleague B. Marcordes record the successful breeding of one of Gurney's Pitta's closest relatives, the Banded Pitta. In this case, at least, it seems that the problems can be overcome by hand-rearing the young pittas, and the offspring can therefore be fostered in relatively large numbers. Although imprinting on humans has been found to be a significant risk with many other

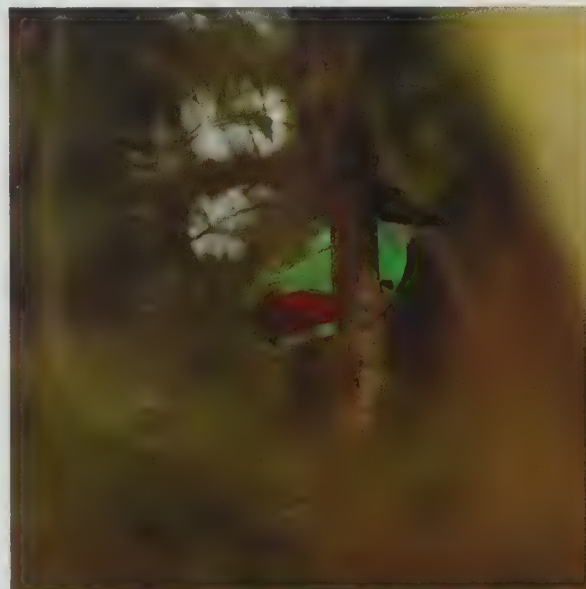
species bred in captivity, their tameness making subsequent release into the wild problematic, hand-reared pittas appear to show hardly any signs of such imprinting.

There may be a small chance that some individuals still inhabit lowland moist forest and secondary growth in the southern part of Tenasserim, in south Myanmar, from where bird-catchers are said from time to time still to sell live Gurney's Pittas at the border with Thailand. BirdLife International has applied to the military government in Myanmar for a permit to undertake an expedition into the area, but such requests have not been successful. It is believed, however, that forest in Tenasserim is also being cleared at a rapid rate. A few confiscated Gurney's Pittas are kept in various Thai zoos.

Notwithstanding the high level of conservation effort involving the local people, including, for example, the adoption of sustainable agriculture in the Khao Nor Chuchi project area, the clearance of forest still persists, and some hunting and trapping still take place in the sanctuary. A survey in 2001 confirmed that protection and law enforcement at Khao Nor Chuchi are effectively non-existent. The most recent conservation initiatives include special training for the Thai Royal Forestry Department rangers to enable them to achieve more effective patrolling at Khao Nor Chuchi, and a proposal to utilize a plot of about 16 ha in extent for a pilot attempt at replanting, with local villagers being paid to do the work and to protect the plot. A programme of environmental awareness has been established, this being aimed at schoolchildren in the immediate area of the Khao Nor Chuchi site.

The conservation strategy aimed at protecting Gurney's Pitta has reached a bottleneck. The issue now is whether this pitta will be the first bird species to become extinct in the new millennium. Even though the species' current situation may seem desperate, there may nevertheless be a glimmer of hope that it can survive, as it appears to prefer some stages of advanced, well-watered secondary regrowth. One can only hope that the massive resources in terms of finance and manpower which have been devoted to efforts to save this beautiful bird will not have been in vain.

No pitta species has become extinct within historical times. Nine species, however, are currently listed by BirdLife International as globally threatened. The conservation status of Gurney's Pitta, discussed above, is listed as Critical, while that of eight others is listed as Vulnerable. One of these is Schneider's Pitta, also discussed above. The other seven are the Blue-headed Pitta, the Graceful Pitta, the Superb Pitta, the Fairy Pitta, the Azure-breasted Pitta, the Whiskered Pitta and the Black-faced Pitta. The Convention on International Trade in Endangered Species of Wild Flora and Fauna, CITES, includes Gurney's and the Whiskered Pittas in Appendix I and the Fairy Pitta in Appendix II. At the tenth conference of the parties, in 1997 at Harare, in Zimbabwe,



The **Graceful Pitta** is a Sumatran endemic, occurring in the highlands and probably less widespread than the other Sumatran endemic, Schneider's Pitta (*Pitta schneideri*). It is difficult to observe and thus not well known, but must probably be considered rare or very local. Rapid growth of Sumatra's human population, in large part due to the government-backed transmigrations, and replacement of the forest by agriculture are the most serious threats to this pitta's long-term survival, but far more information is needed to form the basis of the necessary conservation strategy. Though Graceful Pittas are known to be present in some protected areas, this is far from a guarantee of security.

[*Pitta venusta*.  
Photo: Christopher W. Brack]

The **Rajah Sikatuna National Park**, on Bohol, appears to be a stronghold for the **Azure-breasted Pitta**, endemic to the Philippines, but this park is still under pressure from illegal incursions. There are also recent records from two locations on Mindanao, but no birds have been seen on Samar and Leyte since the 1960s. The small, fragmented population is now probably in rapid decline and is threatened primarily because its rainforest habitat is still being destroyed or heavily degraded.

[*Pitta steerii coelestis*,  
Rajah Sikatuna National Park, Bohol, Philippines.  
Photo: Pete Morris]



The aptly named **Superb Pitta** is richly adorned in glossy black, sky-blue and scarlet. Its entire population, estimated, perhaps rather optimistically, at 1000 calling birds, is confined to Manus Island, and its conservation status is Vulnerable. There is certainly a large area of forest unexplored and a more accurate population estimate is clearly essential in order to develop a conservation strategy. The species is shy and apparently not highly vocal, and it remains poorly known. Further study is needed to clarify habitat preferences, which may involve bamboo thickets or open hilltop forest near a river with stones for breaking snail shells; it may also be able to exist in selectively logged forests and agricultural-forest mosaics. Snakes may represent a serious threat to the Superb Pitta.

[*Pitta superba*, Manus, Admiralty Islands, off northern New Guinea. Photo: William S. Peckover]



it was decided to establish an additional category, Appendix IV (D), in which the Blue-naped, Rusty-naped, African, Azure-breasted, Hooded, Indian and Blue-winged Pittas were placed, while the Banded Pitta has been moved from Appendix II to Appendix IV.

Restricted to lowland forest of Borneo, the Blue-headed Pitta has almost certainly suffered a very rapid decline in numbers as large areas of its habitat have been removed by commercial logging operations. Uncontrolled fires simply add to the problems which it faces. Although the pitta is present in several protected areas, including two national parks, logging in those areas continues on a large scale. It seems likely that, unless the rate of removal of lowland forest is reduced, or, better, halted, and unless protected areas are properly and effectively managed for the benefit of their wildlife, this pitta will soon reach the stage at which its conservation status may have to be raised to Endangered.

The Graceful Pitta, restricted to a few localities in Sumatra, has suffered similar large-scale loss of habitat. A poorly known species which is difficult to observe, it appears to be rare and very local. As with the Blue-headed Pitta, it is present in at least two national parks, but protection of such areas is at best scant. Indeed, the Kerinci-Seblat National Park, one of the places where this pitta occurs, has been stated to be one of the most threatened protected areas within the entire Oriental Region.

Farther east, in the Admiralty Islands, the Superb Pitta is found on Manus, which represents its entire global range. It lives in lowland forest and fragmented forest, but also occurs in secondary growth. This species is very poorly known, and there are very few recent observations of it. Although it has been suggested that it may have a particular liking for bamboo thickets, its habitat preferences remain to be clarified. As elsewhere, fairly extensive logging has already taken place on Manus, but a more serious threat is possibly the presence on the island of two species of snake, the ground boa and the brown tree snake; the latter has

been introduced into Guam, where it has almost eliminated many forest birds. Nevertheless, only a very small part of Manus has been explored so far, and there is still over 1500 km<sup>2</sup> of forest remaining, which may house a larger pitta population than supposed. The species seems not to be very vocal, and could perhaps, therefore, be easily overlooked.

If the Superb Pitta may be more common than has been believed, the same cannot be said about the Fairy Pitta. Despite its large breeding range, which extends from Korea and Japan south to south-east China and Taiwan, the latter species has undergone a rapid decline during recent decades. Until the beginning of the 1980s it was caught by the hundreds every year on Taiwan, but it has now been declared to be uncommon there. In fact, its total world population is now thought to number only a few thousand individuals. Although it has been described by one author as being common in its non-breeding range in the north of Borneo, this may have been the result of confusion with the very similar and far commoner Blue-winged Pitta. Owing to the fact that the Fairy Pitta's population has diminished so rapidly and so markedly, this lovely species is now legally protected in all countries in which it breeds. The vast forest-clearance programme in China, aimed at generating more farmland in this densely populated country, may have played a great part in the pitta's decline, and the trapping of hundreds of individuals annually for the cagebird trade on Taiwan may also have taken its toll, but it is difficult to believe that these are the only explanations. The small size of the population makes it particularly vulnerable to catastrophic events. As the Fairy Pitta is the only true ocean-crossing migrant within the family, the possibility that great numbers have been caught in typhoons and drowned cannot be excluded. Whatever were the main causes of the species' massive reduction, it would seem essential effective protection be afforded to those forests in which it is known still to breed. Furthermore, the problem of hunting in China, where most animals are considered to be exploitable, pittas being no exception, needs to be addressed.





The **Whiskered Pitta** is classified as **Vulnerable**. It is confined to the island of Luzon, in the Philippines, where it is found mainly in montane forests. It is still locally common, but habitat loss is undoubtedly a serious threat in the longer term, even though the species is apparently able to survive in selectively logged forests. The Sierra Madre mountains are a very important stronghold for this pitta, known locally as the "Kong Kong", and this same range supports 27 other threatened bird species, including the Great Philippine Eagle (*Pithecophaga jefferyi*), but even here the Whiskered Pitta is threatened by illegal logging and the islanders' tradition of hunting with snares.

[*Pitta kochi*,  
Luzon, Philippines.  
Photo: Bill Simpson]

Two of the Vulnerable species are confined to the Philippines. The Azure-breasted Pitta occurs on the islands of Samar, Leyte, Bohol and Mindanao. It occurs in only one protected area, the Rajah Sikatuna National Park on Bohol, where it appears to be still locally common. Otherwise, there are recent records of the species from only two other localities, in east and west Mindanao. It has not been recorded from Samar or Leyte since the 1960s. The other species, the larger Whiskered Pitta, lives only in mountainous habitats on Luzon, where it is present in four protected areas. It has been found at a reasonable number of localities since 1990, and subsequent surveys on Luzon indicate that it is com-

mon locally. Both of these pittas, however, are believed to have declined rapidly as a result of the severe loss and degradation of forest habitat that has occurred in the Philippines. Lowland deforestation has been extensive, and in some areas total, and even at the somewhat higher elevations occupied by the Whiskered Pitta logging has destroyed much of the forest. Protected status does not guarantee that an area is safe from exploitation, either. The Whiskered Pitta is additionally threatened by the activities of local hunters, who use snares to catch the birds.

The last of the Vulnerable species is the Black-faced Pitta, which is found on Bougainville and on two of the Solomon Islands, in three subspecies. It is believed to have been rare throughout much of the last century. Recent research on Choiseul yielded no positive result, and the local people were unaware of the pitta's existence. There are no recent records from Bougainville, either, and it may be extinct on both islands. The nominate subspecies had not been seen on Santa Isabel since 1936, but in 1994 the happy news came that it was common in the south-east of the island, at Tirotonga. The pittas there were found in primary forest and small forest remnants, but also in secondary growth in an area with gardens, where they appeared, in fact, to be more common than they were in the larger unbroken forest tracts. The species continued existence elsewhere on Santa Isabel, however, has not been established. It is difficult to determine what may have caused the decline and possible extinction of this beautiful pitta species on the other two islands. Habitat loss could have been a significant factor; in the early decades of the twentieth century, the Black-faced Pitta was known to occur in parts of its range in forested mountain valleys and coastal and alluvial plains, and these areas have been logged since then. It has also been suggested that this ground-nesting species would be susceptible to the many introduced cats and other mammals on the islands. Although this possibility cannot be excluded, the pittas at Tirotonga were found to be living beside settlements where cats, dogs, and rats (*Rattus*) were common. Without further studies, of course, it is impossible to be certain of what adverse effects, if any, these mammals may have been having on the breeding success of the Black-faced Pittas.

Three species are considered Near-threatened. These are the Giant and Garnet Pittas of southern South-east Asia, Sumatra and Borneo, and the Mangrove Pitta, which occurs at scattered localities from Bangladesh south to Sumatra. The first two are

The Vulnerable **Black-faced Pitta**, apparently always rare, is an endemic of Bougainville, Choiseul and Santa Isabel in the Solomon Islands group. Sadly, it may be extinct on the first two of these, but in 1994 it was discovered to be common at Tirotonga on Santa Isabel. Found there in both primary forest and a patchwork of forest, secondary thickets and gardens, it is actually commonest in the garden thickets. Introduced mammals appear not to constitute a major threat, and a planned ecotourism facility at Tirotonga should help to boost conservation of Santa Isabel's rare and outstandingly beautiful pitta.

[*Pitta anerythra anerythra*,  
Tirotonga, Santa Isabel,  
Solomon Islands.  
Photo: Guy Dutton]





Formerly relatively numerous, the Critically Endangered **Gurney's Pitta** was rediscovered in Thailand in 1986, some 34 years after it had apparently disappeared. In-depth studies soon led to its becoming better known than any other pitta species. The prime focus has been on habitat conservation, comprising a host of initiatives involving local people. Sadly, despite all the huge expense and effort, lowland rainforest is still being destroyed, and a single small area of forest now holds just ten pairs. However, the bird does seem to prefer some stages of secondary growth and there is a slight hope that it may survive in Myanmar.

[*Pitta gurneyi*,  
Khao Nor Chuchi Wildlife  
Sanctuary,  
southern Thailand.  
Photo: Uthai Treesucon]



forest species, the Giant Pitta inhabiting lowlands and hills, occasionally up to about 1200 m, and the Garnet Pitta preferring lowland evergreen forest below 600 m. Both have suffered greatly from the massive destruction of forest which has taken place throughout their ranges during the twentieth century. Fortunately, each species seems able to adapt to heavily disturbed habitats and secondary growth, while the Giant Pitta's use of submontane slopes, which have not, so far, been so heavily deforested, has assisted its survival. The Mangrove Pitta, being confined to coastal mangroves, probably has a rather small population size. As with the previous two species, the greatest threat to this pitta is habitat loss; mangroves are heavily exploited for their timber, which is used as a source of fuel and building materials, as well as for the production of charcoal. While all three species are not currently believed to be at risk, the destruction and degradation of their habitats continue inexorably in all parts of their ranges, and could well lead to a change in their conservation status.

A fourth taxon is also considered Near-threatened. The subspecies *dohertyi* of the Red-bellied Pitta is found only on the Banggai and Sula Islands, to the east of Sulawesi, where it inhabits lowland evergreen forest below 200 m. Although this habitat is subject to increased clearance and disturbance, the pitta appears able to survive well in secondary forest and heavily degraded forest, and is perhaps not at any immediate risk. Often treated as a separate species, the "Sula Pitta" (see Systematics), it is local and generally uncommon.

Many of the numerous subspecies of the Red-bellied and Hooded Pittas, the combined ranges of which cover a vast area extending from the Himalayan foothills and the Philippines in the north to the Sunda Islands and New Guinea in the south, have not yet been monitored. Judging from the few old museum skins, some of them are so distinctive that future workers will probably regard them as valid species (see Systematics), provided that they are not exterminated before taxonomic studies can be carried out. Besides the Near-threatened taxon *dohertyi*, mentioned in the preceding paragraph, this applies to the Red-bellied Pitta subspecies *rubrinucha* from Buru, in the Moluccas, *novaehibernicae* from New Ireland, in the Bismarck Archipelago, and *splendida* from Tabar Island, east of New Ireland. The last of those is still reportedly common. Similarly, the taxon *novaeguineae* is widespread in New Guinea, and may be a distinct species, separate from the Hooded Pitta.

The Blue-naped Pitta was once a common bird, but is now considered scarce in most of its range, where extensive forest clearance has taken place. The same applies to both the Blue-rumped and the Rusty-naped Pittas. All three of these closely related species are dull-coloured and skulking and are therefore difficult to monitor. The Blue-naped and Blue-rumped Pittas were formerly listed as Near-threatened, as also was the Bar-bellied Pitta, but it now seems that they survive in sufficiently large numbers to sustain their populations.

Although the majority of the members of this family are to a rather large degree sensitive to human disturbance of the environment in which they live, some appear to be more adaptable. Several species demonstrate a high tolerance of habitat degradation, one example being the Blue-winged Pitta of South-east Asia, which is found in a variety of primary and secondary habitats, as well as in plantations and gardens. In Thailand, for example, where few tracts of lowland forest still persist, even the Near-threatened Giant Pitta has been located in small patches of forest or in scrub, and a pair was found breeding in a 2-ha grove of secondary growth, approximately 2 km from the nearest forest.

Gould, one of the foremost nineteenth-century ornithologists, referred to the subspecies *irena* of the Banded Pitta as "one of Nature's living jewels". It is clear that the greatest threat to pittas, and to many other tropical bird species, is habitat degradation and destruction. Unfortunately, the majority of the Pittidae live in countries with hard-pressed economies, and where the human struggle for daily food is deemed to be more important than the conservation of nature and natural resources. The Gurney's Pitta project at Khao Nor Chuchi sets an example of what may perhaps be the only way for the richer nations of the world to help to save the last living jewels of the rainforest.

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# Genus *PITTA* Vieillot, 1816

## 1. Eared Pitta

### *Pitta phayrei*

**French:** Brève ornée **German:** Ohrenpitta **Spanish:** Pita Orejuda  
**Other common names:** Phayre's Pitta

**Taxonomy.** *Anthocincla Phayrei* Blyth, 1862, Tounghoo, Myanmar.

Sometimes placed in a separate, monotypic genus *Anthocincla*, and such treatment may indeed be more appropriate; differs from other pittas by shorter legs, slightly decurved and slender bill, and longer hind claw; shows distinctive horn-like "ears"; performs an acoustic display, apparently unparallelled in the family, with wings producing knocking sounds; foraging technique is more static, involving less constant movement about territory. Allegedly darker birds from NE Tonkin sometimes separated as race *obscura*, but individual variation considerable. Monotypic.

**Distribution.** NE Bangladesh, and C & SE Myanmar and W, NW & E Thailand E to S China (S Yunnan) and S to Indochina (S Cambodia, C Annam).



**Descriptive notes.** 22 cm. Male is plain red-brown above, sides of forecrown yellow-ochre scaled black, central crown and nape black; face dark brown, long black-edged whitish feathers resembling horns on side of crown; wings and tail dark red-brown, outer flight-feathers with pale band, wing-coverts edged yellow-ochre; chin and upper throat white, rest of underparts rufous-buff with variable amount of black spots; iris brown; bill blackish; feet flesh-brown to pale brown. Female is duller, ear-tufts shorter, underparts more spotted. Juvenile is duller than female, with few spots below; tip of bill and base of lower mandible

yellow. **Voice.** A drawn-out whistling "whee-ow-whit", similar to that of *P. cyanea* but more drawn out; also, a short, dog-like yelp or whine as alarm and contact call.

**Habitat.** Lowland rainforest, second growth and mixed deciduous forest and bamboo. Prefers drier areas than those occupied by *P. cyanea*. Commonest below 900 m, but occurs to 1830 m in Myanmar, Thailand and China.

**Food and Feeding.** Snails. Feeds on ground among leaf litter and rotten wood of fallen tree trunks, suggesting that many different invertebrates are also taken. Commonly employs a more static foraging technique than other members of family.

**Breeding.** Recorded in Apr-Aug in Myanmar; juvenile seen in late Oct in Thailand. Nest globular, with side entrance, loosely built of roots, leaves and grass, on ground with small "path" of sticks up to entrance. Clutch 4 eggs, creamy white with dark brown spots and underlying grey-lilac spots, 27 × 21 mm; no further information available.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Widespread but rare throughout most of range. Reportedly rare also in 19th century, but described as locally common in SW Cambodia in 1938 and at Nam Khueng (NC Laos) in 1940. In Thailand, most easily found nowadays at Khao Yai and Khao Soi Dao National Parks, and also present in Huai Kha Khaeng Wildlife Sanctuary. Common in S Laos (Houay Bangliang) in 1995/96. Uncommon in Myanmar, Tonkin and C Annam. Very rare in China (Yunnan); possible record in 1990 on Hainan, but status there unknown. Seems to be tolerant of some habitat alteration. No hunting or commercial trading of this species has been reported. Although it is not currently considered threatened, this may perhaps be due to the fact that it has been very little studied; survey work is therefore recommended.

**Bibliography.** Bangs & Van Tyne (1931), Bingham (1903), Campey (1996), Cheng Tsohsin (1987), Collar *et al.* (1994), Deignan (1945), Delacour (1927), Delacour & Greenway (1940), Delacour & Jabouille (1931, 1940), Dickinson & Dekker (2000), Dickinson *et al.* (2000), Duckworth *et al.* (1999), Engelbach (1938), Etchécopar & Hüb (1983), Evans & Timmins (1998), Inskipp *et al.* (1996), Kazmierczak (2000), King *et al.* (1975), Lekagul & Round (1991), MacKinnon & Philipps (2000), Riley (1938), Robson (2000c, 2000d), Round (1988, 2002), Smythies (1986), Stattersfield & Capper (2000), Strange (2000), Stuart Baker (1922-1935, 1934), Vestergaard (1998), Wang Sung (1998), Whitehouse (1988), Yang Lan (1983).

## 2. Blue-naped Pitta

### *Pitta nivalensis*

**French:** Brève à nuque bleue **German:** Orangestirnpitta **Spanish:** Pita Nuquiazul  
**Other common names:** Nepal Pitta

**Taxonomy.** *Paludicola Nivalensis* Hodgson, 1837, Nepal.

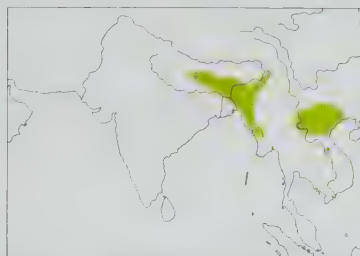
Has on occasion been placed in a separate genus, *Hydrornis*, along with *P. soror* and *P. oatesi*; these three are closely related. Form *nuchalis*, from Darjeeling, now considered synonymous with nominate *nivalensis*. Two subspecies recognized.

**Subspecies and Distribution.**

*P. n. nivalensis* (Hodgson, 1837) - Himalayas from C Nepal and SE Tibet E to S Arunachal Pradesh and E & S Assam, S to N West Bengal, Bangladesh (Chittagong Hills) and N, W & S Myanmar (Chin Hills, N Arakan Hills and upper Chindwin).

*P. n. hendeei* Bangs & Van Tyne, 1931 - S China (S Yunnan, SW Guangxi) S to N & C Laos and N Vietnam (Tonkin, extreme N Annam).

**Descriptive notes.** 22-25 cm; 110-132 g. Male has uniformly dull olive-green upperparts, tail with faint blue tinge; head rufous to buffish with black postocular stripe, hindcrown, nape and a variable part of upper mantle bright turquoise-blue; wings brown, edged buffish-brown; underparts cinnamon-buff, often with pinkish wash on chin and upper throat, latter with broken black band(s); iris brown; bill brown; feet brownish-flesh. Female differs in having hindcrown and nape green, upperparts more brown. Dusky stripes found on upperparts of 34% of 122 adults examined (both sexes, both races). Juvenile is dark brown, mixed with pale buffish streaks on crown, buffish and



white spots on body except for white belly. Race *hendeei* is smaller, typically with smaller blue patch on nape, although this feature appears to be somewhat variable. **Voice.** Call a sharp and powerful "chow-whit", "uk-wuip" or "ip-wuip"; soft chuckle exchanged by partners when feeding.

**Habitat.** Tropical and subtropical secondary forest, bamboo growth and clearings with dense vegetation, usually near water; on limestone rock in N Annam and in riparian woodland and swamp-forest in India. Occurs in lowlands but more often at higher elevation; mostly to c. 1500 m, but reported to 2150 m.

**Food and Feeding.** Diet includes ants, beetles and other insects, grubs, worms, snails, also lizards, and even field mice reported. Feeds on the forest floor, in swamps and brooks, where large bill is used to overturn dead leaves and dig into soil.

**Breeding.** Laying Apr-Aug, mostly May-Jun; double-brooding reported. Domed nest with side entrance, rather loosely built from bamboo leaves, grass and roots, and placed on ground, or more tidily constructed and placed low down in bush or tree. Clutch 3-5 eggs, creamy white with some red-brown spots and underlying grey-lilac markings, mean size in India 29.5 × 22.4 mm; both sexes incubate and both care for young.

**Movements.** Local migrant in India; otherwise largely sedentary, with some altitudinal and dispersive movements.

**Status and Conservation.** Not globally threatened. Very little information available. Fairly common in Bhutan, but scarce in Nepal and Sikkim. Few recent records in India, though locally quite common in Namdapha National Park, Arunachal Pradesh; rare non-breeding visitor in Kaziranga National Park, in Assam. Scarce to uncommon in Myanmar and Tonkin; locally common at Nam Theun drainage basin in C Laos, but scarce in N Laos. Status of S Chinese population uncertain, probably rare at best. Because of its skulking and secretive behaviour, this species' status is not easy to assess. Judging from the literature and the large number of birds collected in earlier times, it was more common in first half of 20th century. No reports of hunting or of trapping for the cagebird trade. Monitoring of populations considered desirable.

**Bibliography.** Abdulali (1976), Ali (1962, 1996), Ali & Ripley (1983), Ali *et al.* (1996), Bangs & Van Tyne (1931), Barua & Sharma (1999), Cheng Tsohsin (1987), Collar *et al.* (1994), Delacour & Jabouille (1940), Dickinson *et al.* (2000), Diesselhorst (1968), Duckworth, Salter & Khounboline (1999), Duckworth, Tizard *et al.* (1998), Eames *et al.* (2001), Etchécopar & Hüb (1983), Evans & Timmins (1998), Fleming *et al.* (1976), Grimmett *et al.* (1998, 2000), Harvey (1990), Inskipp (1989), Inskipp & Inskipp (1991, 1993), Kazmierczak (2000), MacKinnon & Philipps (2000), Meyer de Schauensee (1984), Ripley (1982), Robson (2000a, 2000d), Rozendaal (1988), Shrestha (2000), Smythies (1986), Stattersfield & Capper (2000), Stepanyan (1995), Stuart Baker (1934), Yang Lan (1983).

## 3. Blue-rumped Pitta

### *Pitta soror*

**French:** Brève à dos bleu **German:** Blaubürzelpitta **Spanish:** Pita Lomiazul  
**Other common names:** Blue-headed(!)/Blue-backed Pitta

**Taxonomy.** *Pitta (Hydrornis) soror* R. G. W. Ramsay, 1881, Saigon, Vietnam.

Has on occasion been placed in a separate genus, *Hydrornis*, along with *P. nivalensis* and *P. oatesi*; these three are closely related. Populations of SE Laos and C Annam often separated as race *annamensis* on basis of geographically discrete range coupled with more extensive lilac colour on face and crown; owing to great variation in, especially, amount of lilac, however, and insufficient museum material and field studies, considered better treated as synonymous with nominate. Five subspecies recognized.

**Subspecies and Distribution.**

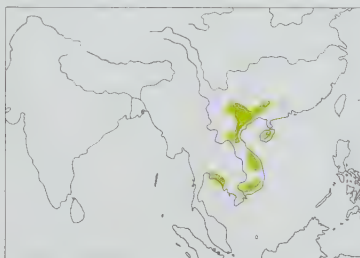
*P. s. tonkinensis* Delacour, 1927 - S China (Guangxi) and N Vietnam (C Tonkin).

*P. s. petersi* Delacour, 1934 - SE Tonkin, N Annam and C Laos.

*P. s. douglasi* Ogilvie-Grant, 1910 - Hainan.

*P. s. soror* R. G. W. Ramsay, 1881 - SE Laos and Vietnam (C & S Annam, Cochinchina).

*P. s. flynnstonei* Rozendaal, 1993 - SE Thailand and SW Cambodia.



**Descriptive notes.** 22-24 cm; 102-120 g. Male has rufous-lilac on forehead and forecrown, becoming bright blue on hindcrown and nape; side of head rufous-lilac, narrow orange-rufous posterior superciliary stripe, black postocular stripe; upperparts bright green, rump bright blue, tail green; wings dusky brown, edged green; underparts orange-rufous, often narrow, broken black upper breastband; iris dark brown to sepia; bill pale pinkish-horn; legs and feet flesh-coloured to orange-cinnamon. Female is duller all over, with less blue on nape. Dusky stripes found on upperparts of 44% of 54 adults examined (both sexes, all races). Juvenile is

dark brown above, crown with buffish streaks and upperparts spotted buffish, plain dirty cinnamon below, paler buffish-pink on throat, often some black spots on upper breast, tip of bill paler. Races differ in size and colour tones: *tonkinensis* is largest, with blue-tinged green crown and nape, tending to paler, pinker colour below, female with only faint blue and green tones on crown and nape; *petersi* is somewhat smaller than previous, very similar to nominate, crown and nape pale blue with faint greenish tinge; *douglasi* is smaller than previous, more purple face and forecrown, green crown, breast washed with pink, female with only faint blue and green tones on crown and nape; *flynnstonei* resembles nominate, but larger. **Voice.** Possibly some geographical variation: a full "weaeo" or "weeya", repeated at 7-second intervals or longer, described from Tonkin; most frequently heard call in Vietnam a frog-like "ppew" or "eau", this and "cho" possibly an alarm note; a single sharp "hwip" or "whit" when disturbed at nest; in Thailand a sharp, breathless "tew" and longer, descending "tiu".

**Habitat.** Wide range of habitat types occupied, from moist riverine primary evergreen forest to secondary or logged forest, mixed forest with bamboo, forest dominated by fan palms (*Licuala*) on



dry steep slopes, or on craggy limestone ground. Rarely in bamboo-dominated forest, and not found in deciduous areas. Lowlands from 50 m to 1700 m in Vietnam, 90-850 m in Laos, and 900-1650 m in Thailand.

**Food and Feeding.** Only snails reported as being consumed; probably insects and earthworms also taken. Uses rocks and stones as “anvils” for smashing snail shells.

**Breeding.** Only three breeding records documented, all in Jun from Vietnam, where also fledglings observed in Jun-Aug. Domed nest constructed of dead leaves, dry rattan leaves, long strips of palm leaves, and black rootlets, with platform of twigs in front of side entrance, placed 1.3-2.4 m above ground in tree or palm c. 4-5 m tall. Clutch 3 eggs, white with pinkish tinge and spotted chocolate-brown, 29 × 22 mm; no other definite information.

**Movements.** No information available; probably sedentary.

**Status and Conservation.** Not globally threatened. Generally fairly common to scarce. In Vietnam, common in Ha Tinh and Quang Binh provinces, Cuc Phuong National Park and Son Tong, and also recorded from Tu Phuc, N Annam; in Laos, common at Xe Piau and observed at Dong Hua Sao, Pha Som/Naliang and Nam Theun; fairly common but local in SE Thailand. Endemic race *douglasi* very rare on Hainan. No abundance data available from other parts of range. General status difficult to judge owing to its reclusive behaviour, but seems to be fairly tolerant of habitat interference. Not known to be hunted by local people for food or regularly caught for cagebird trade. Present in several protected areas, e.g. Nam Bai Cat Tien and Bach Ma National Parks (Vietnam), Xe Pian National Biodiversity Conservation Area (Laos) and Jian Jenling Nature Reserve (China).

**Bibliography.** Bangs & Van Tyne (1931), Campey (1996), Cheng Tsohsin (1987, 2002), Collar *et al.* (1994), Delacour (1927), Delacour & Jabouille (1929, 1940), Dickinson & Dekker (2000), Dickinson *et al.* (2000), Duckworth *et al.* (1999), Dymond (1988), Eames & Ericson (1996), Eames & Robson (1992), Eames, Eve & Tordoff (2001), Eames, Lambert & Cu (1994), Eames, Robson *et al.* (1991), Ellis (2002), Échécopar & Hùe (1983), Evans & Timmins (1998), Hall (1952), Lambert *et al.* (1995), Le Trong Trai (1999), Le Trong Trai & Richardson (1999a), Lekagul & Round (1991), MacKinnon & Phillipps (2000), Meyer de Schauensee (1984), Robson (1991, 1994, 2000d), Robson, Eames, Nguyen Cu & Truong Van La (1993a, 1993b), Robson, Eames, Wolstencroft *et al.* (1989), Round (1988), Rozendaal (1988, 1993), Stattersfield & Capper (2000), Stepanyan (1993), Thewlis *et al.* (1996), Yang Lan (1983).

4. Rusty-naped Pitta

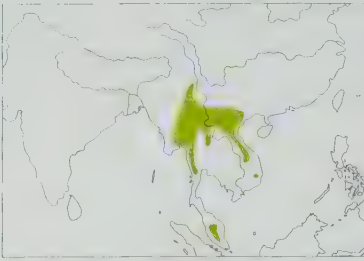
Pitta oatesi

**French:** Brève à nuque fauve      **German:** Rostbauchpitta      **Spanish:** Pita Rojiza  
**Other common names:** Fulvous Pitta

**Taxonomy.** *Hydroornis Oatesi* Hume, 1873, Toungoo district, Upper Pegu, Myanmar. Has on occasion been placed in a separate genus, *Hydroornis*, along with *P. nipalensis* and *P. soror*; these three are closely related. Racial identity of birds in S Vietnam (S Annam) uncertain; tentatively placed with *bolovenensis*. Four subspecies recognized.

**Subspecies and Distribution.**

- P. o. oatesi* (Hume, 1873) - N, E & SE Myanmar E to NE Laos and S to W, S and NE Thailand.
- P. o. castaneiceps* Delacour & Jabouille, 1930 - S China (S Yunnan), NW Vietnam (W Tonkin, N Annam) and C Laos.
- P. o. bolovenensis* Delacour, 1932 - S Laos and S Annam.
- P. o. deborah* B. F. King, 1978 - C Peninsular Malaysia.



**Descriptive notes.** 23-25 cm; 117-124 g. Male has crown and nape rufous, side of head paler rufous to buffish with a blackish postocular stripe; upperparts and tail dull dark green, often with blue wash, especially on rump; wings dark olive-brown, edged buffish; underparts rufous, chin, upper throat and belly paler, often broken blackish breastband; iris brown; bill pale brown to dark vinous brown; feet flesh-pink to light orange. Female has crown often finely edged black, and upperparts less green, with rufous wash. Dusky stripes found on green upperparts of 55% of 95 adults examined (both sexes, all races). Juvenile is dark brown, crown

and nape with whitish streaks, upperparts and breast with large whitish spots, chin, throat and belly off-white with brown and buffish mottling; iris brown with grey outer ring. Race *castaneiceps* is slightly larger, crown and nape more reddish; *bolovenensis* has top of head more rufous, back more green, rump intense blue; *deborah* resembles last, but slightly smaller and darker. **Voice.** Most common call a sharp “chow-whit” with upward inflection on second note, given every 4-5 seconds and often up to 25 times when breeding; explosive, falling “poouw”, possibly a female call; alarm call “tchick” or “chek”, becoming “chur-r-r-rt” or “wer-r-r-rt” when intruder near nest.

**Habitat.** Prefers dense primary and secondary montane forest, often with ravines and broken ground; often seen near gulleys. Also reported from limestone hills in Tonkin. Ranges from 380 m up to 2600 m; found at higher altitudes than *P. nipalensis* and *P. soror*.

**Food and Feeding.** Insects, grubs, slugs, small snails and worms; also seen foraging among kitchen waste. Forages among leaf litter, turning over dead leaves with the bill.

**Breeding.** Main season Feb-May, but breeding also reported in Sept in Thailand. Domed nest built of dead and skeletonized leaves, twigs, stems of ferns and rootlets, with side entrance, and situated up to 3 m above ground in palm; possibly sometimes on ground and with stick platform leading to entrance. Clutch 2-5 eggs, occasionally 6, creamy white with dark brown and red-brown spots and blotches and lilac-brown underlying markings, mean size in Myanmar 28.5 × 24.3 mm; nestling period at least 19-20 days.

**Movements.** Resident in Peninsular Malaysia and probably also elsewhere in range.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common. In Thailand, rare at Doi Pui and uncommon elsewhere; no recent information from Myanmar. In Peninsular Malaysia, c. 5 pairs/km² at Fraser’s Hill; uncommon at Larut Hills (Perak), and from Genting Highlands (Pahang) to Gunung Telapa Buruk (Negeri Sembilan). Very rare in China (S Yunnan). A very shy and secretive pitta, easily overlooked. Not known ever to have been hunted for human consumption or trapped for the cagebird trade, and no other threats at present. Any destruction of the species’ forest habitats could, however, lead to serious declines or local extinction.

**Bibliography.** Anon. (1989b, 1989c), Bangs & Van Tyne (1931), Cheng Tsohsin (1987, 2002), Collar *et al.* (1994), Deignan (1945, 1963), Delacour & Jabouille (1940), Dickinson & Chaiyaphun (1973), Dickinson *et al.* (2000), Duckworth *et al.* (1999), Eames & Ericson (1996), Eames *et al.* (2001), Échécopar & Hùe (1983), Evans & Timmins (1998), Hill *et al.* (2001), Jeyarajasingam & Pearson (1999), King, B.F. (1978), Le Trong Trai (1999, 2000), Le Trong Trai & Richardson (1999b), Lekagul & Round (1991), MacKinnon & Phillipps (2000), Meyer de Schauensee (1984), Riley (1938), Robson (1995, 2000d), Robson *et al.* (1993a, 1993b), Round (1983, 1984, 1988), Rozendaal (1988), Smythies (1986), Stattersfield & Capper (2000), Stepanyan (1993), Wells (1983, 1985b, 1990b), Yang Lan (1983).



110. 1. 1915

111. 1. 1915

112. 1. 1915

113. 1. 1915

114.

115.

PLATE 5







PLATE 5

## PLATE 5

## Family PITTIDAE (PITTAS) SPECIES ACCOUNTS

### 5. Schneider's Pitta

*Pitta schneideri*

French: Brève de Schneider

German: Rostkappentitta

Spanish: Pita de Schneider

**Taxonomy.** *Pitta schneideri* Hartert, 1909, Batak Mountains, upper Deli, north-west Sumatra. Closely related to *P. caerulea*, and also to *P. cyanea*; may also share some affinities with *Hydrornis* group. Monotypic.

**Distribution.** Highlands of Sumatra.

**Descriptive notes.** 21-23 cm. Male has top of head and nape bright chestnut-orange, black eyestripe, buffish side of head with many feathers edged black, giving spotted appearance; upperparts and tail shining ultramarine-blue; wings brown; chin and throat white, broken black breastband, rest of underparts orangey-buff; iris red-brown to brown; bill dark brown, tip and base paler; feet light brown with purplish tinge. Female has brown upperparts with blue rump and tail, and is otherwise generally duller than male. A few dusky stripes on blue upperparts of only two of 17 adult males and females examined. Juvenile has dark brown crown and nape spotted pale buffish, warm brown upperparts, dark grey-blue tail, whitish throat, rest of underparts mottled orange-brown mixed with brown; female duller than male. **Voice.** A soft, protracted, double whistle, first note rising, second falling, repeated up to 11 times at intervals of 5-6 seconds; calls just after dawn.

**Habitat.** Mountain primary forest, most often with dense undergrowth and treefall clearings or near forest edge. Most older records are at 900-1400 m, but now found from 1700 m up to 2400 m. **Food and Feeding.** Feeds on large cockroaches (Blattodea) and large snails, and also seen with a prey item which looked like a large grey millipede (Diplopoda); vegetable food also reported. A pair observed foraging by vigorously turning over dead leaves on the forest floor.

**Breeding.** Possibly breeds in Feb-Jun, as juveniles found in Mar-Jul. Nest and eggs not described.

**Movements.** Presumably sedentary, but possibly some altitudinal movement.

**Status and Conservation.** **VULNERABLE.** Restricted-range species; present in Sumatra and Peninsular Malaysia EBA. Has been found so far at fewer than ten localities. In 1914, it was found to be common in Kerinci Valley and on Mt Kerinci, in Kerinci-Seblat National Park, at up to 2200 m



but mostly below 1400 m; following the collection of a specimen in 1936, however, there were no reported sightings for over 50 years and the species was feared extinct. Then, in 1988, a male and a pair were discovered on Mt Kerinci, at 2375 m, with subsequent reports from Mt Tuijuh (1900 m) and Mt Dempo (c. 1750 m) in the Bukit Dingin/Gunung Dempo Protection Forest, and it has been heard at Berestagi in the Batak Highlands. Recent reports from Dolok Sibual Bual Nature Reserve remain unconfirmed. Greatest threats are slash-and-burn agriculture, timber concessions and a growing human population, which have habitat likely to be suboptimal. The species' presence within the Kerinci-Seblat National Park is, sadly, no guarantee for its survival; hunting with air-guns and ground snares is commonly observed in the park. More data are required in order for an accurate assessment of its present conservation status to be made and, moreover, for any comprehensive conservation programme to be formulated. Not known to be kept in captivity. **Bibliography.** Andrew (1992), Anon. (1988b, 1988c, 1989a), Collar & Andrew (1988), Collar, Andreev *et al.* (2001), Collar, Crosby & Stattersfield (1994), Dickinson *et al.* (2000), Holmes (1996), Holmes & Nash (1991), Hurrell (1989), MacKinnon & Philipps (1993), van Marle & Voous (1988), Robinson & Kloss (1918b), Robson (1989b, 1997b), Rozendaal (1990), Stattersfield & Capper (2000), Sujatnika *et al.* (1995), Tobias (1995), Wells (1985b).

### 6. Giant Pitta

*Pitta caerulea*

French: Brève géante

German: Riesenpitta

Spanish: Pita Gigante

Other common names: Great Blue Pitta

**Taxonomy.** *Myiothera caerulea* Raffles, 1822, Sumatra.

In the past was sometimes placed in a separate genus, *Gigantipitta*, on account of very large size; closely related to *P. schneideri*, and also to *P. cyanea*; may also share some affinities with *Hydrornis* group. Two subspecies recognized.

**Subspecies and Distribution.**

*P. c. caerulea* (Raffles, 1822) - S Myanmar (S Tenasserim), S Thailand, Peninsular Malaysia and Sumatra.

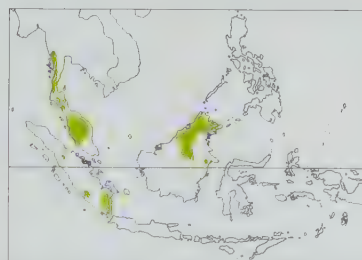
*P. c. hosei* Baker, 1918 - N, SW, C & E Borneo.

**Descriptive notes.** 25-29 cm; male 202 g. Male has head pale to rather dark grey-brown with black scaling, especially on crown; black eyestripe, black stripe from crown to nape, blackish hindcollar; upperparts and tail blue; innerwing and scapulars blue, outerwing dark brown, secondaries edged grey-blue; underparts golden buffish-grey, black collar broken in centre of upper breast; iris hazel to dark brown; strong bill black; feet pinkish-grey. Female is browner, barred on forehead to nape, upperparts and wings plain red-brown. Dusky stripes found on upperparts of 17% of 36 adults examined (both sexes, both races). Juvenile is mottled golden ochre and dark brown, paler below, tail dull blue; bill orange-flesh, tipped yellow. Race *hosei* male is similar to nominate but generally darker on head, though both races are variable; female more rufous on head, with black edgings reduced, and almost lacking on nape. **Voice.** Slow and mournful "hwoo-er" and soft "wheer" often repeated many times, the latter possibly as contact or alarm; "phooooooooou", dying towards end, also reported.

**Habitat.** Lowland and hill primary and secondary forest, often in dense, swampy forest. Commonest at low altitudes, but recorded to 1200 m.

**Food and Feeding.** Primarily snails and earthworms; larger insects and their larvae, as well as frogs and small snakes, also reported taken. Feeds in leaf litter in manner of a thrush (Turdidae), using sideways movements of the bill to overturn leaves. Rocks used as "anvil" for smashing snail shells.

**Breeding.** Season about Mar-Nov. Domed nest loosely constructed from broad dead leaves, bamboo leaves and sticks, with platform leading to lateral entrance, 80 cm to 3 m above ground in fork of small palm. Clutch 2-3 eggs, off-white with brown spots, most numerous and finest at broad end, 32 × 26 mm; both sexes incubate, period c. 16 days, and both also care for nestlings; female broods chicks during night, even 2 days before fledging, presumably to protect them from predation by snakes; fledging period c. 16 days. Longevity in captivity over 12 years.



**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Fairly widespread but scarce to rare, and very shy. Rare in Tenasserim and Thailand; present in Khao Nor Chuchi Wildlife Sanctuary, Thailand. In Peninsular Malaysia was moderately common in NW (Perlis and N Kedah) in 1939, but now scarce throughout range there; present in Taman Negara National Park. Generally rare in Borneo, but reported as locally common in N (Sabah); recently reported also from SW, in Gunung Palung National Park, well outside previous known range; present in Sepilok Re-

serve. Not definitely recorded in Sumatra since end of 19th century, though there is an unconfirmed recent sight record at Mt Leuser, in Aceh; remaining lowland forest E of species' main area of distribution in Bukit Barisan has, however, been little explored ornithologically. The species' voice has only recently been recorded, making it likely that this pitta has previously been overlooked. A nest found in a forest fragment, only 50 m from where a house was being constructed, and sightings in overgrown rubber estates, scrub and thickets suggest some adaptation to human-induced habitat changes. Nevertheless, the rapid destruction of all lowland forest represents a potentially serious threat to this species. One pair has been bred successfully in captivity.

**Bibliography.** Allen (1953, 1959), Andrew (1992), Bransbury *et al.* (1994), Collar, Andreev *et al.* (2001), Collar, Crosby & Stattersfield (1994), Dickinson *et al.* (2000), Duckworth & Kelsh (1988), Fogden (1976), Holmes (1996), Jeyarajasingam & Pearson (1999), Lambert (1990, 1992a), Lekagul & Round (1991), Lewis *et al.* (1989b), MacKinnon & Phillipps (1993), van Marle & Voous (1988), Martyr (1997), McKelvey & Miller (1979), McLoughlin (1988), Medway (1972), Medway & Wells (1976), Medway *et al.* (1968), Porter (1933b), Riley (1938), Robson (1997b, 2000d), Robson & Komolpalin (1988), Round (1988, 2000), Round & Treesucon (1986b), Round *et al.* (1989a, 1989b), Rozendaal (1990, 1994), Showler (1992), Smythies (1986, 1999), Stattersfield & Capper (2000), Wells (1983, 1985b), Whitehouse (1988).





ssp. *aurantiaca*

ssp. *schwaneri*

ssp. *cyanea*

ssp. *guajana*

ssp. *willoughbyi*

ssp. *irena*

PLATE 6

inches 4  
cm 10

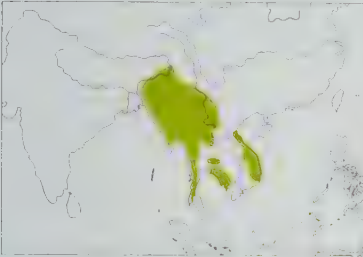


7. Blue Pitta

Pitta cyanea

**French:** Brève bleue      **German:** Fleckenbrustpitta      **Spanish:** Pita Azul  
**Other common names:** Lesser Blue Pitta

**Taxonomy.** *Pitta cyanea* Blyth, 1843, Arakan, west Myanmar. In past, on occasion placed in separate genus *Leucopitta*; alternatively, sometimes placed with the *Eucichla* group; however, appears to be most closely related to *P. schneideri* and *P. caerulea*. Three subspecies recognized.  
**Subspecies and Distribution.**  
*P. c. cyanea* Blyth, 1843 - E Bangladesh, NE India (Arunachal Pradesh, Assam) and Myanmar (except N) E to S China (S Yunnan) and S to Tenasserim and S Thailand, also NE Laos and Vietnam (S Tonkin S to C Annam).  
*P. c. aurantiaca* Delacour & Jabouille, 1928 - SE Thailand and SW Cambodia.  
*P. c. willoughbyi* Delacour, 1926 - C Laos to S Annam.



**Descriptive notes.** 22-24 cm; 99-120 g. Male has conspicuous flame-orange hindcrown and nape, black central crownstripe, black stripe through eye; upperparts and tail blue; innerwing and scapulars blue, outerwing black with small white spot in primaries; underparts pale grey-blue with black spots and bars; iris dark brown; bill black; feet plumbeous with flesh-coloured tinge. Female is duller, upperparts dark olive with a little blue on mantle, tail blue like male's. Dusky stripes found on upperparts of 53% of 116 adults examined (both sexes, all races). Juvenile is dark brown, mantle with pale rufous-buff streaks, breast spotted dark

brown and rufous-buff, tail dull blue, red base of bill. Race *aurantiaca* has nape more yellowish-orange; *willoughbyi* is brighter in both sexes, often some red on breast. **Voice.** Liquid "pleow-whit" or "choocoo-whip", drawn out and with sharp ending, c. 1 second long, probably by both sexes, most vocal in Apr-Oct; alarm a rasping "skeew" or "eeyow".

**Habitat.** Evergreen forest and bamboo, often with steep ravines, both in moist forest adjacent to streams and thick ground vegetation and in dry and less dense forest; also in limestone forest in Vietnam. From 60 m to 2000 m, but most often at lower altitudes.

**Food and Feeding.** Diet includes insects, insect larvae, worms, grubs and snails; stomach of a traffic casualty contained only beetles. Forages by digging in soil with its bill, like a thrush (Turdidae).

**Breeding.** Breeds May-Jun, rarely also Jul, in India and Myanmar, and in Jun-Oct in Thailand. Domed nest with side entrance loosely built from bamboo leaves, roots and debris, with platform of wet bamboo leaves, placed on rock, tree stump or ground, sometimes partly or wholly unconcealed; sometimes constructed of sticks, leaves, moss and grass and placed up to 4 m above ground in understorey or young tree. Clutch 4-5 eggs, occasionally up to 7, glossy white with dense purplish-brown and black spots and lines, 28 x 21 mm; both parents incubate, period not documented; fledging period not recorded.

**Movements.** Largely sedentary, but some local altitudinal movement likely in India and Myanmar; probably only a breeding visitor in Bangladesh.

**Status and Conservation.** Not globally threatened. Appears to be rare in India, with only a few recent records from Arunachal Pradesh, Assam, Manipur, Mizoram and Tripura. Only recent record from Bangladesh was in NE in May and Jun 1988, when some individuals seen in West Bhanugach Reserve Forest were suspected to be breeding. Status in Myanmar unknown, but fairly common in W & SE Thailand, and common in Khao Yai National Park. Very rare in S China (Yunnan). In Vietnam, located at five sites in 1991. Although generally considered rare to locally frequent, its highly secretive habits mean that it can easily be overlooked; may be more numerous than observations indicate. Not known to be hunted for food or trapped for the cagebird trade.

**Bibliography.** Ali & Ripley (1983), Ali *et al.* (1996), Cheng Isohsin (1987), Deignan (1945), Delacour & Jabouille (1940), Dickinson *et al.* (2000), Duckworth *et al.* (1999), Eames & Lambert (1994), Eames & Robson (1992), Eames, Eve & Tordoff (2001), Eames, Steinheimer & Bansok (2002), Evans & Timmins (1998), Grimmett *et al.* (1998), Harvey (1990), Hill *et al.* (2001), Kazmierczak (2000), Lekagul & Round (1991), Lewis *et al.* (1989b), MacKinnon & Philipps (2000), McClure (1974), Meyer de Schauensee (1984), Rashid (1967), Riley (1938), Ripley (1982), Robson (1994, 2000d), Robson *et al.* (1993b), Round (1984, 1988), Round & Treescuon (1983), Rozendaal (1988), Singh (1994), Smythies (1986), Stattersfield & Capper (2000), Stuart Baker (1934), Thewlis *et al.* (1996), Thompson *et al.* (1993), Wang Sung (1998), Whitehouse (1988), Wiles (1979), Yang Lan (1983).

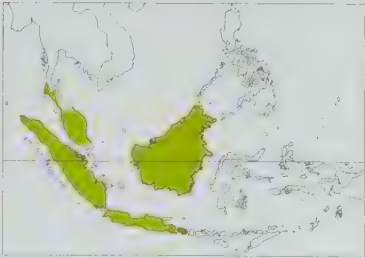
8. Banded Pitta

Pitta guajana

**French:** Brève azurine      **German:** Bindenpitta      **Spanish:** Pita Barrada  
**Other common names:** Blue-tailed Pitta; Irene/Van den Bosch's Pitta (*irena*)

**Taxonomy.** *Turdus Guajanus* Statius Muller, 1776, Banjuwangi, eastern Java. On basis mainly of longer, graduated tail, sometimes placed in separate genus *Eucichla*, along with *P. elliotii* and *P. gurneyi*, and on occasion *P. cyanea*. Significant geographical differences in coloration and voice; race *schwaneri* possibly a separate species; the two W races may together form another species, in which *ripleyi* perhaps represents only a clinal extreme of *irena*; further study needed. Birds from W Java often recognized as race *affinis*, but considered generally inseparable from nominate. In addition, described race *bangkae*, supposedly from Bangka I, is thought to have been named from a mislabelled specimen originating probably from W Java. Four subspecies currently recognized.

**Subspecies and Distribution.**  
*P. g. ripleyi* Deignan, 1946 - S peninsular Thailand.  
*P. g. irena* Temminck, 1836 - Peninsular Malaysia (Perlis S to Johor) and Sumatra.  
*P. g. schwaneri* Bonaparte, 1850 - Borneo.  
*P. g. guajana* (Statius Muller, 1776) - Java and Bali.



**Descriptive notes.** 20-23 cm; 93-106 g (Java), 60-80 g (Borneo). Male has top and side of head black, with broad bright yellow supercilium; upperparts plain chestnut-brown, rump and tail deep blue; wings blackish-brown with white spot in primaries, some white in outer secondaries, and median and greater coverts broadly tipped white; chin and throat white, gradually becoming yellow on lower throat, dark blue band on upper breast, rest of underparts yellow with blackish barring; iris dark brown; bill black; feet purplish-pink. Female is duller, top of head brown, supercilium buffish, narrow black upper breastband, yellow on underparts paler. Dusky stripes found on blue uppertail-coverts of only 6% of 157 adults examined (both sexes, all races). Juvenile is speckled brown, some white wing-covert patches, brown tail soon becoming blue, bill with orange base and tip; sexual dimorphism evident by fledging, male showing dark brown breast with faint streaking and barring, female showing paler breast with cream-coloured spots, head darker in male. Race *irena* has deeper yellow supercilium becoming flame-orange on nape, blue underparts with orange barring on breast side, female resembles nominate male except that eyebrow is pale buff at front, becoming yellow behind eye and orange on nape; *ripleyi* resembles last, but orange usually extends from nape to near eye; *schwaneri* has large blue belly patch, female differs from nominate in yellowish eyebrow. **Voice.** Varies geographically: in Malay Peninsula a falling "pouw" and a short, whirring "kirr" or "whirr", both of an explosive quality; softer "hwow" in Sumatra; call higher-pitched in Java and Bali; in Borneo "shewo" and "hirr", repeated every 10-15 seconds, more rarely explosive "pauk" and gentler "kur-kur" or "purr".

**Habitat.** Primary forest, often near limestone cliffs; more rarely in older secondary forest, coffee plantations or heavily logged forest. Lowlands and to 1500 m.

**Food and Feeding.** Mainly insects, e.g. scarabid beetles, caterpillars, termites (Isoptera) and ants, cockroaches (Blattodea), also snails and earthworms; small orange berries also taken. Two individuals recorded to have fed on corpse of dead shama (*Copsychus*) or, possibly, on invertebrates contained therein. Forages on ground, where reported scratching with the feet in chicken-like manner.

**Breeding.** Breeds in Jun-Sept in Thailand, in Mar-Dec in Peninsular Malaysia, in Apr-Sept in Sumatra, in Jan-Jun in Java and in Mar-Aug in Borneo. Globular nest 24-30 cm in diameter, with side entrance, built of broad leaves, some skeletonized, bamboo leaves, small sticks and grass, loosely held together with rootlets and fibres, and placed low in bush or sapling or in rattan palm. Clutch 2-5 eggs, typically 3 or 4, white with rufous, brown, lavender and black spots concentrated at broad end, with underlying grey-lilac spots, mean size in Java 25 x 22 mm; laying interval in captivity (*irena*) c. 27 hours; incubation by both sexes, period 13 days; both sexes also care for chicks, which fledge after 15 days, able to feed selves after further 4 days.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. CITES II. As a lowland-forest species it is already rare in Thailand, where nearly all lowland forest is logged, although still 12-13 pairs/km<sup>2</sup> in a small forest patch in 1986. Situation not much better in Peninsular Malaysia, where recorded as common only in W Pahang in 1939; locally common in lowland forest in N in 1971, but in 1994 had disappeared from Panti Forest Reserve in S (Johor); fairly common in Taman Negara National Park. Rather local in Sumatra, but common in Way Kambas National Park. Uncommon to locally rather common in Java and Bali. Widely distributed but local in Borneo, where common only in Sarawak and Sabah. Has declined rapidly, not only as a result of habitat destruction but also because of the cagebird trade, in which this is among the most frequently seen pitta species. Despite its showing some tolerance of habitat alteration, forest destruction remains a threat, at least in the long term. Present in numerous protected areas, e.g. Khao Nor Chuchi Wildlife Sanctuary (Thailand), Ujung Kulon and Balura National Parks (Java), and Bali Barat National Park (Bali). Has been bred successfully in captivity.

**Bibliography.** Andrew (1985, 1992), Baars (1984), van Balen (1999), Beckett (1975), Bransbury *et al.* (1994), Bruning (1977), Danielsen & Heegaard (1995), Davison (1995), Deignan (1946), Diamond *et al.* (1987), Dickinson & Dekker (2000), Dickinson *et al.* (2000), Duckworth & Kelsh (1988), Ellis (2002), Fogden (1976), Glenister (1971), Harrison (1974), Hellebrekers & Hoogerwerf (1967), Holmes (1997), Hoogerwerf (1947, 1963a), Hornskov (1987), Jeyarajasingam & Pearson (1999), Lambert & Collar (2002), Lekagul & Round (1991), Lewis *et al.* (1989a, 1989b), Lim Kim Seng (1994), MacKinnon (1988), MacKinnon & Philipps (1993), Mann (1988), van Marle & Voous (1988), Medway & Wells (1976), Mees (1986, 1996), Meyer de Schauensee (1958), Mitsch (1990), Nash & Nash (1988), Nilsson (1989, 1990), Parrott & Andrew (1996), Porter (1932), Riley (1938), Rinke & Marcordes (2002), Robson (2000d), Roles (1974), Round (1988), Round & Treescuon (1986b), Sargeant (1997), Showler (1992), Silvius & Verheugt (1986), Smythies (1986, 1999), Sody (1989), Stattersfield & Capper (2000), Thompson (1966), Thomsen *et al.* (1992), Vernon (1974), Wells (1975, 1985b, 1990b), Whitehouse (1988).

9. Bar-bellied Pitta

Pitta elliotii

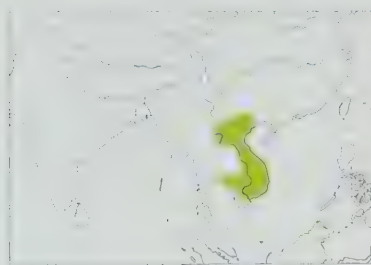
**French:** Brève d'Elliot      **German:** Grünscheitelpitta      **Spanish:** Pita de Elliot  
**Other common names:** Elliot's Pitta

**Taxonomy.** *Pitta elliotii* Oustalet, 1874, Cochinchina. On basis mainly of longer, graduated tail, sometimes placed in separate genus *Eucichla*, along with *P. guajana* and *P. gurneyi*, and on occasion *P. cyanea*. Monotypic.

**Distribution.** Extreme E & SE Thailand, Laos, Vietnam and Cambodia.

**Descriptive notes.** 19-21 cm; 85-97 g. Male has top of head and nape blue-green, bluer on sides, broad black band from lores to nape; upperparts dark green, faintly tinged blue, tail bright blue-violet; chin and upper throat white, lower throat and upper breast blue-green, rest of underparts barred yellow and black, dark blue belly centre; iris brown to dark brown; bill dark red-brown to black; feet fleshy-coloured. Female has top of head and nape buffish-brown with central crown greenish, throat and upper breast dirty buffish, rest of underparts less yellow than male, no blue on belly. Dusky stripes found on upperparts of 37% of 27 adults examined (both sexes). Juvenile is dark brown, darker on head side, spotted buff above and on breast, pale throat, mostly orange bill. **Voice.** Common call a cheerful trisyllabic whistle, "tu-wi-whil", "per-ur-wu", "hwt-whit-too" or "chawee-wu", repeated every c. 9 seconds; occasionally a mellow "hhwee-bwba"; loud, exclamatory "skew", "jeeow" or "jow" as alarm; soft "coo" by adults approaching nest, chicks answering with soft "chip" and tweets.





**Habitat.** Evergreen and semi-evergreen forest with rich understorey, often on limestone; also secondary forest and logged areas. Also moist riverine primary forest in S Laos. Often in bamboo-dominated understorey in flat forest, but also in dry sloping forest where understorey dominated by fan palms. Occurs from sea-level to 800 m.

**Food and Feeding.** Only termites (Isoptera), a 2-cm-long caterpillar and earthworms reported. Pecks at ground, turns over leaves; once seen repeatedly digging in soil and leaf litter.

**Breeding.** Season probably Apr-Jun, but very few records. Domed nest 18 × 24 × 20 cm, with

side entrance and a "doormat" 13 × 12 cm, built of twigs, leaves of palm, bamboo and rattan, some leaves skeletonized, lined with finer leaf veins, and placed low down in palm or to 5 m in tree. Clutch 2-4 eggs, creamy white and unmarked, or spotted brown at broad end, 29 × 22 mm; incubation and nestling periods undescribed; both parents feed fledglings.

**Movements.** Apparently sedentary.

**Status and Conservation.** Not globally threatened. Fairly common to common. Until 1926 was known only from two skins, and in period up to 1988 only few were reported; was thought to be very rare and, with large areas of lowland forest having been destroyed, was declared a threatened species. In 1988, however, it was found by ornithologists to be common in Vietnam at Cuc Phuong National Park, Ky Son, Kon Ha Nung, Buon Luoi and Kon Cha Rang, in C Annam, and at Son Tung, in N Annam; also seen in Nam Bai Cat Tien National Park, in S Vietnam, in 1994; also present in Bach Ma National Park. In S Laos, 1 male/75 m found in a semi-evergreen forest in 1993, and another observer reported the species as common in that part of the country; but said by others to be potentially at risk in 1995/96; present in Phou Xang and Xe Pian National Biodiversity Conservation Areas. Scarce to rare in Thailand, where few records from SE possibly derive from trade skins from elsewhere. No human persecution reported. Rediscoveries of this pitta in recent years suggest that it may be under-recorded through much of range, but extensive deforestation could well pose a major threat to its long-term survival.

**Bibliography.** Campey (1996), Collar & Andrew (1988), Collar *et al.* (1994), Delacour (1929, 1930b), Delacour & Jabouille (1928, 1940), Dickinson *et al.* (2000), Duckworth (1996), Duckworth *et al.* (1999), Eames (1996a, 1996b), Eames & Erierson (1996), Eames & Robson (1992), Eames, Eve & Tordoff (2001), Eames, Lambert & Cu (1994), Inskipp *et al.* (1996), King *et al.* (1975), Le Trong Trai & Richardson (1999a), Lekagul & Round (1991), Mountfort & Arlott (1987), Nguyen Cu *et al.* (2000), Robson (2000d), Robson, Eames, Nguyen Cu & Truong Van La (1993a, 1993b), Robson, Eames, Wolstencroft *et al.* (1989), Round (1988), Rozendaal (1988, 1989), Rozendaal & Nguyen Cu (1989), Stattersfield & Capper (2000), Stepanyan (1993, 1995), Strange (2000), Thewlis *et al.* (1996).

## 10. Gurney's Pitta

### *Pitta gurneyi*

**French:** Brève de Gurney

**German:** Goldbrustpitta

**Spanish:** Pita de Gurney

**Other common names:** Black-breasted Pitta

**Taxonomy.** *Pitta Gurneyi* Hume, 1875, southern Tenasserim, Myanmar.

On basis mainly of longer, graduated tail, sometimes placed in separate genus *Eucichla*, along with *P. guajana* and *P. ellioti*, and on occasion *P. cyanea*. Monotypic.

**Distribution.** Peninsular Thailand in Krabi Province (Khao Nor Chuchi), and possibly extreme S Myanmar (S Tenasserim).

**Descriptive notes.** 21 cm; 57-86 g. Male has black head, glossy ultramarine-blue central crown to nape; upperparts plain warm brown, longest uppertail-coverts and tail shining blue; chin white, and variable amount of white on centre of throat; upper breast and flanks orange-yellow, flanks barred black, rest of underparts black; iris dark brown; bill black; feet dull flesh. Female has crown and nape yellow-buff, underparts variably barred black and buffish to rufous-buffish, central belly unbarred. Dusky stripes found only on blue uppertail-coverts of 7% of 69 adults examined (both sexes). Juvenile is dull dark brown, crown and nape with golden-ochre stripes, breast streaked buffish, bill with orange tip. **Voice.** Heard in Mar-Jun, a short, explosive "lilip", female call shorter "lup"; alarm of both sexes "skyeew"; low-pitched "hoo" also reported.



**Habitat.** Inhabits lowland semi-evergreen and secondary riverine rainforest dominated by dipterocarp trees and with dense understorey of bamboo, palms and vines; also rubber plantations with similar understorey or with native trees and palms; also degraded forest fragments. Strong preference for vicinity of small streams or gulleys where moist conditions prevail throughout year. Has been recorded also in swamp-forest when not breeding. Lowlands to 160 m.

**Food and Feeding.** Variety of prey reported: annelid worms, many kinds of insects and their larvae, spiders, slugs and snails, and small frogs.

Use of anvils not reported. Exposes concealed prey by tossing aside leaves with lateral flicks of bill.

**Breeding.** Season late Apr-Oct, with peak in Jun. Domed nest 19-20 cm in diameter, with side entrance 10 × 7 cm, built of bamboo leaves, broadleaves and sticks, lined with fine black rootlets, and situated low in tree or rattan. Clutch 3-4 eggs, occasionally 5, glossy cream-white, spotted and freckled with pale to very dark inky-purple spots and with underlying grey-lilac spots, 26 × 21 mm; both parents incubate, only female at night, incubation period not known; both also feed chicks, which leave nest at 14-15 days. Fledging success at three nests 27-3%.

**Movements.** Resident.

**Status and Conservation.** **CRITICAL.** CITES I. Extremely rare and local. Considered common in S Myanmar (Tenasserim) in late 19th century, but not recorded since 1914, and reported massive deforestation by logging companies since 1988 suggests little chance of its survival there. Was also common and more widespread in peninsular Thailand up to 1915, but apparently declined thereafter and, after specimen was collected in 1952, the species was not seen again for 34 years (except for a few in the wild-bird trade). In 1986, it was rediscovered in one of Thailand's last remnants of lowland rainforest at Khao Nor Chuchi Reserve (also called Khao Pra-Bang Kham Non-hunting Area), in Krabi Province; in the following year 17 pairs were located, and in 1988 at least 40 pairs, of which a few were in scattered forest fragments in Khlong Phraya Wildlife Sanctuary and Khao Phanom Bencha National Park; by 1992, however, the population around Khao Nor Chuchi (upgraded to a Wildlife Sanctuary in 1993) was estimated at 25-35 pairs at most, with a few additional ones at Khlong Phraya. Surveys in 2000 and 2001 indicated that this species' total world population is no more than c. 30 individuals, with 11-12 territories known to survive at Khao Nor Chuchi and a further two at nearby Tambon Aw Tong, in Trang. Despite intensive fieldwork, this pitta has not been found in other suitable lowland forest, but the fact that it is a relatively silent species makes it extremely difficult to census; in 39 hours of observations at a nest, only nine calls were heard. Notwithstanding an enormous conservation effort involving the local people, including e.g. the adoption of sustainable agriculture in the Khao Nor Chuchi project area, clearance of forest persists. Moreover, the planting in illegally cleared forest patches of oil palms (*Elaeis guineensis*), which are increasingly taking over from less profitable rubber plantations, poses major problems; no pitta can live there, because no natural cover remains among the palms. Trapping for the cagebird trade was a great threat until the early 1990s; although it appears almost to have ceased, some hunting and trapping still take place in the sanctuary. A survey in 2001 confirmed that protection and law enforcement at Khao Nor Chuchi is effectively non-existent. Subsequent conservation initiatives include special training of Thai Royal Forestry Department rangers in order to achieve more effective patrolling at Khao Nor Chuchi; the proposed utilization of a plot of c. 16 ha for a pilot attempt at replanting, with local villagers paid to do the work and to protect the plot; and a programme of environmental awareness aimed at school-children in the immediate area of the Khao Nor Chuchi site. Clearly the species' current situation appears desperate, though there may be some small chance for its survival, as it appears to prefer some stages of advanced, well-watered secondary regrowth.

**Bibliography.** Aitchison (1993), Anon. (1989d, 2000b, 2000c), Banwell (2000), Clement (2001), Collar (1986, 2000, 2001, 2002), Collar & Andrew (1988), Collar, Andreev *et al.* (2001), Collar, Crosby & Stattersfield (1994), Collar, Round & Wells (1986), Deignan (1963), Dickinson *et al.* (2000), Erritzoe (2001), Ferganbauer-Kimmel (1986), Fuller (2000), Gould (1986), Green & Hirons (1991), Gretton (1987a, 1987b, 1988), Gretton & Robson (1987), Gretton *et al.* (1993), Hocombe (1989), Jepson & Grimmett (2002), King, W.B. (1978/79), Lansdown & Pankhurst (1989), Lekagul & Round (1991), Lewis *et al.* (1989b), Medway & Wells (1976), Pitches (1997a), Poole (1995), Rands (1991a), Riley (1938), Rinke (2002), Rinke & Marcordes (2002), Robinson & Kloss (1911), Robson (2000b, 2000d), Round (1987, 1988, 1992, 1995, 1996, 1999), Round & Boonhatee (2002), Round & Treesucon (1983, 1986a, 1986b), Schröder (1987), Shuker (1993), Smythies (1986), Stattersfield & Capper (2000), Strange (2000), Sykes *et al.* (2000), Treesucon (1999), Whitehouse (1988), Wirth (2002).





PLATE 7

inches 4  
cm 10



*ssp maxima*



15





## 11. Blue-headed Pitta

### *Pitta baudii*

**French:** Brève à tête bleue

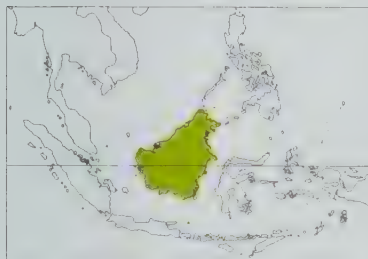
**German:** Rotrückenpitta

**Spanish:** Pita Cabeciazul

**Taxonomy.** *Pitta baudii* S. Müller and Schlegel, 1839, south Borneo.

Formerly placed in monotypic genus *Iridipitta*, on basis of dark purplish-blue underparts, unique among pittas; alternatively linked with *Eucichla* group. Monotypic.

**Distribution.** Borneo.



**Descriptive notes.** 16-17 cm; male 56-69 g, female 65-76 g. Male has glossy blue forehead to nape, black lores and facial mask, maroon-red upperparts, blue tail and uppertail-coverts; most upperwing-coverts black, flight-feathers blackish-brown, prominent white wingband; chin and throat white, breast black, rest of underparts dark purple-blue; iris dark brown; bill black; feet grey-blue to horn or flesh-coloured. Female has top of head and upperparts rufous to cinnamon-brown, palest on head, throat greyish-buff, rest of underparts dull orange-buff to cinnamon. Dusky stripes found on blue rump of 18% of 39 adults examined (both sexes). Juvenile is like

female but duller, breast dark brown, rest of underparts marbled dull brown and golden ochre, bill tip red. **VOICE.** Soft descending "ppor-wi-il"; or shortened "ppor-or"; alarm call of female a drawn-out nasal "hwee-ouu".

**Habitat.** Lowland primary forest and older secondary forest, also logged forest, often with a river nearby. From sea-level to 600 m; an unconfirmed record at 1200 m.

**Food and Feeding.** Diet consists of earthworms, beetles, ants, Orthoptera (grasshoppers, crickets), caterpillars and other soft-bodied arthropods. Feeds among leaf litter by turning over leaves.

**Breeding.** Few records. Single nest found in early May, specimens in breeding condition in Mar-Jun and juveniles seen in Jul to mid-Oct, suggesting season Mar-Oct. Nest was domed, built of matted dead leaves and surrounded by herbs, and placed 50 cm above ground on top of soil mound created by root system of fallen tree. Clutch 2 eggs, glossy white with band of irregular purple-brown spots around widest point; male seen incubating on two occasions.

**Movements.** Apparently sedentary.

**Status and Conservation.** **VULNERABLE.** Locally common but patchily distributed. Occurs in several protected areas: Gunung Palung and Tanjung Puting National Parks and Barito Ulu Reserve, in Kalimantan, Sepilok, Tabin and Gunning Lotung/Malimau Reserves, in Sabah, and Gunung Mulu National Park and Samunsam Reserve in Sarawak. Reported as common in recent years e.g. in C Kalimantan, where up to three calling males found in a forest of 1 km<sup>2</sup>; but other sources suggest that it is rare in Kalimantan and much commoner in N Borneo. Most birds recorded from E Sabah, where very common at Kalabakan and Danum Valley; at one site in N Borneo at least 2 pairs/km<sup>2</sup>. Extremely rare in Sarawak. There are still some lowland forests left in Borneo, which in short term provide grounds for some optimism; on the other hand, the continuing rapid deforestation and uncontrolled fires give cause for concern over the future prospects of this beautiful lowland-forest species. Appears to adapt to some degree to habitat modified by man. No reports of hunting, nor of capture for live-bird markets.

**Bibliography.** Andrew (1992), Bransbury *et al.* (1994), Collar, Andreev *et al.* (2001), Collar, Crosby & Stattersfield (1994), Davison (1980), Dekker & Dickinson (2001), Dickinson *et al.* (2000), Duckworth & Kelsh (1988), Dutton (1990), Elter (1986), Fogden (1976), Holmes (1997), Holmes & Nash (1991), MacKinnon & Philipps (1993), Mitra & Sheldon (1993), Müller & Schlegel (1839), Pope (1997), Showler (1992), de Silva (1981), Smythies (1999), Stattersfield & Capper (2000), Strange (2000), Thompson (1966), Wells (1985b), Wilkinson, Dutton & Sheldon (1991), Wilkinson, Dutton, Sheldon, Noor & Noor (1991).

## 12. Superb Pitta

### *Pitta superba*

**French:** Brève superbe

**German:** Schwarzückenpitta

**Spanish:** Pita Soberbia

**Other common names:** Black-backed Pitta

**Taxonomy.** *Pitta superba* Rothschild and Hartert, 1914, Manus Island, Admiralty Islands.

Relationships uncertain. Has sometimes been considered closest to *P. maxima* and *P. steerii*, or to form a superspecies with those and *P. sordida*, but morphological differences appear to be too great for this treatment to be appropriate; detailed DNA studies required. Monotypic.

**Distribution.** Manus I, in Admiralty Is.



"hwouu-whoou", often given from branch 2-7 m up; chicken-like "quark", mostly from ground, is audible at close range.

**Habitat.** Primary and secondary hilly rainforest, as well as scrub around village gardens and bamboo scrub. Recorded only to 100 m, but probably also inhabits higher altitudes.

**Food and Feeding.** Not documented. Said by local villagers to eat snails after smashing them on stones; this was corroborated by a discovery by ornithologists of a flat stone with snail-shell fragments nearby.

**Descriptive notes.** 21-22 cm. Glossy black, except for large conspicuously iridescent azure-blue and green upperwing-coverts, flight-feathers edged green, and bright red central lower breast, belly and undertail-coverts; iris dark brown; bill black; feet flesh-coloured to horn. Female is smaller and slightly duller than male, red on underparts less bright. Dusky stripes found on blue wing patch of 43% of 54 adults examined (both sexes). Juvenile is dull blackish-brown, blue on wings less extensive and duller, red of underparts replaced by dull pinkish, bill tipped orange-red. **VOICE.** A rising and falling "coo-coo", also described as

**Breeding.** Only known nest with eggs was found in Oct, but five males and eight females in breeding condition in Dec-Jan and juveniles reported in Sept-Oct; presumably breeds in all months, like other birds on Manus. Domed nest with side entrance, constructed of fibres, rootlets, bamboo and other leaves, moss and small twigs, lined with rootlets and fibres. Clutch 2 eggs, glossy white with deep pores and spotted purplish-brown with underlying mauve-grey, 34 × 26 mm.

**Movements.** Sedentary.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Admiralty Islands EBA. Little information on status. Recent survey suggested a total of 1000 calling individuals on Manus (1943 km<sup>2</sup>), but this figure was based on just three calling birds within area of 3.5 km<sup>2</sup> around the village of Rossun; this estimate is considered of doubtful reliability in view of inadequate knowledge of the species' habitat preferences, calling periods and general breeding density. Only a very small part of Manus has been studied so far. Introduced cats and dogs, as well as the apparently native brown tree snake (*Boiga irregularis*) and the ground boa (*Candoica aspera*), are believed to be the greatest threats. Although much of Manus has already been logged or is under logging concessions, some forest cover still remains in 80% of the island; indeed, local people are proud of their forest and most are against logging, preferring instead selective felling, which may give some cause for optimism. Further research and survey work required.

**Bibliography.** Coates (1990), Coates & Peckover (2001), Collar & Andrew (1988), Collar *et al.* (1994), Dutton (2000), Dutton & Newman (1991), Eastwood (1995), Eastwood & Gregory (1995), Fletcher (2000a), Gregory (1995b), Hicks & Hicks (1991), Mayr (1955), Mayr & Diamond (2001), Rothschild & Hartert (1914), Stattersfield & Capper (2000), Stattersfield *et al.* (1998).

## 13. Ivory-breasted Pitta

### *Pitta maxima*

**French:** Brève d'Halmahera

**German:** Weißbrustpitta

**Spanish:** Pita de Halmahera

**Other common names:** Great/Halmahera/Moluccan Pitta

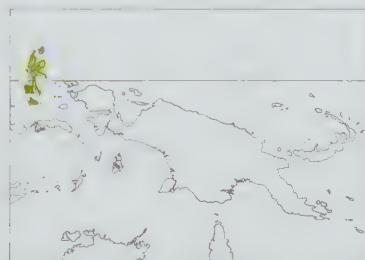
**Taxonomy.** *Pitta maxima* S. Müller and Schlegel, 1845, Halmahera.

Relationships uncertain. Has sometimes been considered closest to *P. superba* and *P. sordida*, or to form a superspecies with those and *P. steerii*, but morphological differences appear to be too great for this treatment to be acceptable; further DNA studies required. Two subspecies recognized.

**Subspecies and Distribution.**

*P. m. maxima* S. Müller & Schlegel, 1845 - Halmahera, including islands of Kasiruta and Bacan, possibly also Mandioli and Obi.

*P. m. morotaiensis* van Bemmelen, 1939 - Morotai.



**Descriptive notes.** 25-28 cm; male 172-206 g, female 166-172 g. Adult has glossy black head, upperparts and tail, shining blue and green upperwing-coverts, black wings with white band on primaries, inner flight-feathers edged green; chin and throat black, rest of underparts ivory-white with large patch of black-based red feathers on central lower breast, belly and undertail-coverts; iris brown; bill black; feet pale flesh-coloured. Sexes alike. Dusky stripes found only on blue and green wing-coverts of 34% of 64 adults examined (both sexes, both races). Juvenile is like adult but duller, without gloss, less bright below. Race *morotaiensis*

is slightly larger, has darker blue wing-coverts, broader white wingband, edges of inner flight-feathers darker blue-green. **VOICE.** Main call a loud, far-carrying, drawn-out "phwee phweeecoou" of c. 1.5 seconds' duration, also transcribed as "wok-wow", "wi-whooou" or "werrhh-wuuhhh"; has been likened to a call of Tawny Owl (*Strix aluco*) or a human wolf-whistle.

**Habitat.** Lowland forest, second growth, often in limestone and karst areas with luxuriant ground vegetation; occasionally in overgrown coconut plantations. To 650 m on Halmahera and 500 m on Kasiruta; to 800 m on Morotai.

**Food and Feeding.** No documented information. Earthworms and caterpillars reported by local people as being eaten by this species; also, an "anvil" with broken snail shells thought probably the result of this pitta's feeding.

**Breeding.** Few data: nests with single egg found in May-Jul, juvenile in early Feb and males with enlarged testes in May, Jun and Nov; probably breeds throughout year. Domed nest built of blackish sticks, dead and skeletonized leaves and fine roots, with small platform of sticks and large dead leaves at side entrance, with moss often hanging over the whole structure; placed on ground between buttress roots of large tree, giving appearance of a ball of fallen plant debris. Clutch size unknown; eggs white with few dark red-brown lines and large spots with grey-lilac underlying spots, c. 33 × 27 mm; no information on incubation and fledging periods.

**Movements.** Sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Northern Maluku EBA. Locally common in all forest and other well-vegetated habitats on Halmahera except NE coast, where uncommon; common on Kasiruta; rare and very local on Bacan. Presence on Mandioli, off SW coast of Bacan, uncertain, but considered likely to occur there. Status on Obi also unknown: probably heard in early 1990s but confirmation of identification required, while earlier report from that island may have involved an escaped individual. No recent reports from Morotai (*morotaiensis*). Not known to be hunted for food or for the cagebird trade.

**Bibliography.** Andrew (1992), Andrews (1988), Babbington (1992), Bostock & Sujatnika (1993), Buck (1987), Coates & Bishop (1997), Dickinson *et al.* (2000), Eastwood (1998), Heinrich (1956), Inskipp *et al.* (1996), Lambert (1994), Lambert & Yong (1989), MacKinnon *et al.* (1995), Poulsen & Lambert (2000), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Strange (2001), Sujatnika *et al.* (1995), White & Bruce (1986).

## 14. Blue-banded Pitta

### *Pitta arquata*

**French:** Brève à bandeau

**German:** Blaubauchpitta

**Spanish:** Pita Bandeada

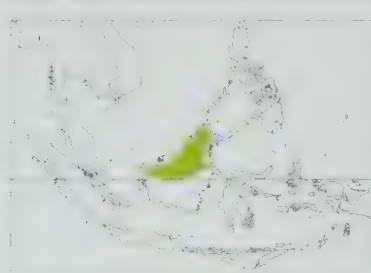
**Other common names:** Necklaced Pitta

**Taxonomy.** *Pitta* (*Phoenicocichla*) *arquata* Gould, 1871, Borneo.



Species name frequently spelt as *arcuata*, by reason of long-established usage following emendation made three years after species was first described; however, original spelling of name must stand. Monotypic.

**Distribution.** N half of Borneo, S to about Mt Penrisen, Barito Ulu and R Mahakam.



**Descriptive notes.** 15 cm; 50–58 g. Male has forehead to nape and side of neck scarlet, a glistening sky-blue postocular stripe, dark green-blue upperparts, narrow line of sky-blue on wing, tail dull blue; side of head and throat orange-rufous, rest of underparts scarlet, glossy sky-blue breastband like a necklace; iris red-brown to grey; bill blackish, tip and lower mandible with reddish tinge; feet blue-grey to plumbeous. Female is similar, but upperparts dark olive-green, tail grey-blue. Juvenile is plain brown, mottled grey-brown and buffish on side of head and throat, sometimes a few pinkish feathers on underparts, bill with pale

tip and orange gape, feet grey. **Voice.** Call is a monotone, single, fluty whistle of 2–3 seconds' duration.

**Habitat.** Forest, often with many fallen trees and bamboo stands. Commonest at 600–1200 m, but recorded from 150 m to 1500 m.

**Food and Feeding.** Ants and other insects. No information on foraging behaviour.

**Breeding.** Season Jan–Sept, with peak in Mar–Aug. Globular nest built of dead leaves, grass and fibres, placed 0.5–2.5 m above ground in tree. Clutch probably 2 eggs but few records, glossy white with grey and brown spots at broader end, c. 30 × 21 mm; no information on incubation and fledging periods.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Locally common. Uncommon in Sarawak, and rarer than the other pittas in Sabah. Locally common in Kalimantan, e.g. seen or heard on 19 occasions between Jul and Sept 1989 in Barito Ulu region (C Kalimantan), and common on Mt Penrisen (in W), but found to be scarce, rare or absent by many authors. Present in Danum Valley Conservation Area. No reports of this species being traded in the live-bird market, and no other known human threats at present.

**Bibliography.** Andrew (1992), Bransbury *et al.* (1994), Davison (1980), Dickinson & Dekker (2000), Dickinson *et al.* (2000), Duckworth & Kelsh (1988), Dutson (1990), Fogden (1976), Holmes (1997), Inskipp *et al.* (1996), MacKinnon & Phillipps (1993), Pope (1997), Showler (1992), Smythies (1957, 1999), Stattersfield & Capper (2000), Voous (1961), Wells (1985b), Wilkinson, Dutson & Sheldon (1991), Wilkinson, Dutson, Sheldon, Noor & Noor (1991).

## 15. Garnet Pitta

### *Pitta granatina*

**French:** Brève grenadine

**German:** Granatpitta

**Spanish:** Pita Granate

**Other common names:** Red-headed Scarlet Pitta; Black-headed/Black-and-crimson Pitta (*ussheri*)

**Taxonomy.** *Pitta granatina* Temminck, 1830, Pontianak, Borneo.

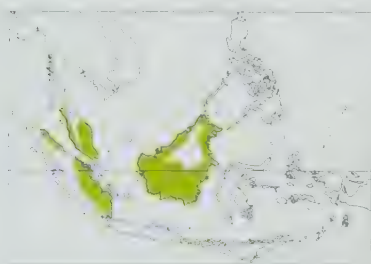
Forms a superspecies with *P. venusta* and sometimes considered conspecific, but differs in structural and plumage characters, in altitudinal preference, and in vocalizations. Alternatively, race *ussheri* has been treated separately as a race of the latter; also, more recently, as a distinct species on basis of different vocalizations and appearance and lack of extensive hybridization where its range meets that of present species, but plumage and vocal differences appear too slight to support this treatment and hybrids are considered to be adequately documented. Three subspecies currently recognized.

**Subspecies and Distribution.**

*P. g. coccinea* Eyton, 1839 - extreme S Myanmar (Tenasserim), extreme S peninsular Thailand, Peninsular Malaysia and E Sumatra.

*P. g. ussheri* Gould, 1877 - N Borneo (S to R Lawas and R Merapok in W and to R Sembakung and R Sesayap in E).

*P. g. granatina* Temminck, 1830 - Borneo (except N).



**Descriptive notes.** 15–16 cm; 53–70 g. A small pitta with mostly black head, dark red hindcrown and nape, bright sky-blue postocular stripe; upperparts glossy black with purple wash, bluer rump, dark blue tail, shining blue upperwing-coverts; throat and upper breast purple-black, rest of underparts red; iris brown to blue; bill black; feet plumbeous purplish-blue to pinkish-grey. Sexes alike. Juvenile is mostly plain brown, paler below, with some dull blue in wings and tail, orange base and tip of bill. Race *coccinea* has red on head extending to forecrown, upperparts more blue, red on underparts mottled with black; *ussheri*

has no red on head. **Voice.** Call a drawn-out monotone and far-carrying whistle of 1.5 seconds' duration; also low purring sound, "prrr, prrr, prrr", when two birds meet.

**Habitat.** Found in both dense primary forest and secondary to heavily logged forest, often swampy. Lowlands to 300 m, locally to 500 m in Borneo.

**Food and Feeding.** Insects, including ants, beetles, wood grubs, cockroaches (Blattodea), once an orthopteran; also small snails; seeds from fruit also found in stomachs. Probes leaf litter and damp soil, often around fallen branches and logs; occasionally forages on logs.

**Breeding.** Mar–Aug; from early Feb in N Borneo. Domed nest with side entrance, built of twigs, fibres and dead and skeletonized leaves, and placed on ground. Clutch 2 eggs, glossy white with red-brown spots and dots and underlying grey-lilac spots, c. 28 × 20 mm. No information available on incubation or fledging periods.

**Movements.** Sedentary.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Uncommon to locally common in Peninsular Malaysia; present in several protected areas, e.g. Taman Negara National Park, and Pasoh and Panti Forest Reserves. Rare in Thailand; not reported from Tenasserim for over 100 years; extinct in Singapore since 1950. Probably scarce in Sumatra, but few recent observations made; until recently was known only from N part of E coast S to Medan, but since then seen farther S (to at least Jambi) and also in SE corner (Way Kambas National Park); probably occurs throughout E coastal lowlands. Widely distributed and locally common in Borneo; race *ussheri* occurs in Danum Valley Conservation Area and Sepilok Reserve. Primary forest already almost totally destroyed in all parts of its range, but this species readily accepts altered and heavily degraded or logged habitats so long as forest patches and thickets of secondary growth remain. No known exploitation for food or the cagebird trade.

**Bibliography.** Bransbury *et al.* (1994), Castelletta *et al.* (2000), Collar *et al.* (2001), Danielsen & Heegaard (1995), Davison (1980, 1995), Delacour (1946), Dickinson & Dekker (2000), Dickinson *et al.* (2000), Duckworth & Kelsh (1988), Duckworth *et al.* (1997), Fogden (1976), Hislop (1956), Holmes (1973, 1996, 1997), Holmes & Burton (1987), Holmes & Nash (1991), Inskipp *et al.* (1996), Jan & Galdikas (1987), Jeyarajasingam & Pearson (1999), Lambert & Collar (2002), Lekagul & Round (1991), Lewis *et al.* (1989b), MacKinnon & Phillipps (1993), Mann (1988), van Marle & Voous (1988), McClure (1998), McGowan (1998), Medway & Wells (1970, 1976), Mitra & Sheldon (1993), Nash & Nash (1988), Parrott & Andrew (1996), Pearson (1975a), Pope (1997), Porter (1932), Riley (1938), Robson (2000d), Round (1988), Rozendaal (1994), Showler (1992), Smythies (1957, 1986, 1999), Stattersfield & Capper (2000), Strange (2000), Stressemann (1938), Wells (1970, 1972, 1985b), Wells *et al.* (1979), Whitehouse (1988), Wilkinson, Dutson & Sheldon (1991), Wong (1985).

## 16. Graceful Pitta

### *Pitta venusta*

**French:** Brève gracieuse

**German:** Maronenrückenpitta

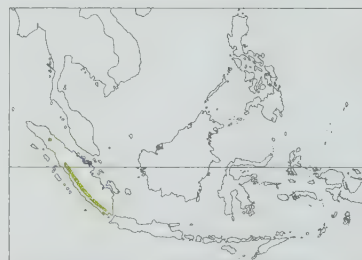
**Spanish:** Pita Graciosa

**Other common names:** Black-crowned (Garnet)/Black-and-scarlet/Sumatran Pitta

**Taxonomy.** *Pitta venusta* S. Müller, 1836, western Sumatra.

Forms a superspecies with *P. granatina* and has been considered conspecific, but differs in structural and plumage characters, in altitudinal preference, and in vocalizations. Alternatively, only race *ussheri* of latter has been included as a race of present species on account of head coloration, but other plumage features and also tail length differ considerably. Monotypic.

**Distribution.** Highlands of Sumatra.



**Descriptive notes.** 18 cm. Blackish-maroon head with bright sky-blue postocular stripe; upperparts, wings, throat and upper breast dark brown with purplish tinge, upperwing-coverts faintly edged violet-blue; long tail dark brown; lower breast and belly scarlet; iris dark brown; bill black; feet purple-black or pale blue. Sexes alike. Juvenile is plain dark brown, postocular stripe buffish, iris greyish, bill tipped red, feet pinkish-grey. **Voice.** Produces low mournful whistle of 1.3–2 seconds' duration, lower-pitched than that of *P. granatina*.

**Habitat.** Moist dark forest with ravines and

dense understorey. From 400 m to 1400 m, occasionally 1600 m.

**Food and Feeding.** Insects, small snails, small bugs (Hemiptera), worms and seeds recorded. Foraging behaviour poorly documented; feeds on ground, sometimes on top of fallen logs.

**Breeding.** Only one nesting record, in May, and few observations of juveniles suggest season May–Jul, but possibly Feb–Oct. Nest domed, loosely constructed of dead leaves and bamboo leaves, fine roots and decayed fibres and moss, placed 60 cm above ground among leaves of orchid growing on trunk of fallen tree. Clutch 2–3 eggs, dull creamy with buffish and dark brown spots, freckles and scratchy lines and underlying grey-lilac spots, c. 23 × 19 mm; no other information.

**Movements.** Presumably resident, though may make local altitudinal movements.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Sumatra and Peninsular Malaysia EBA. Rare and apparently very local, and probably declining. Known from few localities, and records infrequent, even taking into account its skulking behaviour and the few ornithological visits to the Sumatran uplands. Occurs in Kerinci-Seblat and Bukit Barisan Selatan National Parks; recent records from Rimbo Kulit Manis in 1985, and from Mt Kaba, Liwa-Krui, Tandai (in Kerinci-Seblat National Park) and below Bukit Tapan in latter half of 1990s. Forest destruction, degradation and fragmentation are the main threats; almost all lowland forest within the species' range already destroyed and probably c. 40% of montane forest lost, mostly as a result of shifting cultivation. Owing to rapidly growing human population in Sumatra and the continuing rapid rate of deforestation, even within protected areas (especially Kerinci-Seblat National Park), there is an urgent need for more field data in order to provide a basis for formulation of the necessary conservation strategy. Effective management and enforcement of laws relating to protected areas considered essential. Not known from the cagebird trade; this pitta has been legally protected since 1931, but hunting with air-guns and ground snares seems to be a problem.

**Bibliography.** Andrew (1992), Collar *et al.* (2001), Dickinson & Dekker (2000), Dickinson *et al.* (2000), Ellis (2002), Holmes (1996), Inskipp *et al.* (1996), MacKinnon & Phillipps (1993), van Marle & Voous (1988), Martyr (1997), Müller & Schlegel (1839), Robinson & Kloss (1918b, 1924), Robson (1996a, 1997b), Rozendaal (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Tobias (1995).









## 17. African Pitta

### *Pitta angolensis*

**French:** Brève de l'Angola **German:** Angolapitta **Spanish:** Pita Angoleña  
**Other common names:** Angolan Pitta

**Taxonomy.** *Pitta angolensis* Vieillot, 1816, Angola.

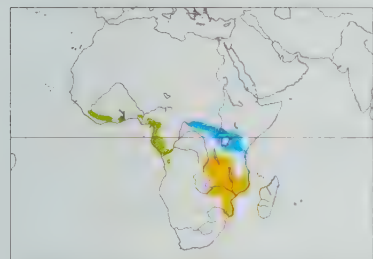
Forms a superspecies with *P. reichenowi*, and sometimes regarded as conspecific on basis of apparent intermediate birds from Cameroon and S Congo; doubts have been expressed, however, over identification of such birds (which could possibly have been nominate race of present species), and there seems little evidence of intergradation where the ranges of the two species approach each other. Three subspecies recognized.

#### Subspecies and Distribution.

*P. a. pulih* Fraser, 1843 - Sierra Leone and SE Guinea E to W Cameroon.

*P. a. angolensis* Vieillot, 1816 - SW Cameroon S to NW Angola.

*P. a. longipennis* Reichenow, 1901 - breeds from SE Zaire and SE Tanzania S to E Zambia, N & E Zimbabwe, S Mozambique and extreme NE South Africa; migrates N to region from S Central African Republic and N & NE Zaire E to S Kenya and N Tanzania.



**Descriptive notes.** 18-20 cm; male 79-92 g, female 81-98 g. Has black head, broad buffish-ochre supercilium, rear supercilial feathers slightly paler and erectile; upperparts bright green, rump and tail-coverts sky-blue, tail black; area near shoulder and wing-coverts sky-blue and violet; flight-feathers blackish, tips paler, white patch on primaries; throat white with pink wash, breast and flanks deep buff, often with golden-green wash, belly and undertail-coverts scarlet; iris red-brown to grey-brown; bill black; feet range from pinkish to greyish-white. Sexes alike. Dusky stripes found on green and blue upperparts of 21% of

56 adults examined (both sexes, all races). Differs from *P. reichenowi* in buff, not green, breast, pinkish throat, brighter green upperparts. Juvenile is much duller and browner than adult, with less blue in plumage, golden-buff supercilium becoming white behind eye, pink belly and vent, orange bill with black central band. Race *longipennis* is larger, wings longer and more pointed, supercilium unicoloured or almost so, plumage generally brighter and slightly paler; *pulih* is smallest, supercilium clearly bicoloured ochre and pale buff, red on belly more extensive, white wing patch smaller, blue in wing-coverts variable. Voice. Main call a short, loud, sharp "ouit" or "wheet" preceded by mechanical "prrrt" believed to be produced by rapid wing-flapping, the whole also rendered as e.g. "ffrueep" or "ffrueep"; also frog-like "(g)rk" and grunts when not breeding, including by migrants, and a hoarse "hggg" apparently as alarm; in captivity, also low "skeow".

**Habitat.** Semi-deciduous and evergreen rainforest, thickets and swampy localities, occasionally deciduous scrub, all with dense undergrowth; non-breeding migrants also in dry subhumid forest with clearings in E Africa (Kenya). Lowlands and hills to 1000 m.

**Food and Feeding.** Insects, including termites (Isoptera), ants, beetles, caterpillars and grubs; also snails, and earthworms and millipedes (Diplopoda). Forages on the ground among leaf litter, especially near ant and termite nests. Stands motionless for up to 5 minutes, watching for prey, before moving in long hops to a nearby spot; also flicks aside leaves with bill, or sweeps aside leaf litter with bill and then pauses briefly to scan ground, holding head to one side in manner of a thrush (Turdidae). When prey located, makes forward lunge to seize it with the bill.

**Breeding.** In W Africa, breeds in Sept in Sierra Leone, Mar-Sept in Liberia, Jul in Ghana, Sept-Oct in Cameroon, Nov in Angola; in E, Nov-Apr in Tanzania and mostly to Feb farther S. Maintains territory of 3000-3600 m<sup>2</sup>. Domed nest 25 × 35 × 20 cm, with side entrance 7-8 cm wide and sometimes with platform in front, built of dead leaves, some skeletonized, and twigs, often with spines, and lined with finer twigs, rootlets and tendrils, the whole rather untidy and loosely built; placed 2-8 m up in usually thorny tree. Clutch 3 eggs, occasionally 1 or 4, dull creamy white with irregular dark brown, grey-brown and underlying grey-lilac spots, blotches and scrawls, most at blunter end, average size in Zambia c. 27 × 23 mm; no information on incubation and fledging periods.

**Movements.** W African populations apparently largely sedentary, but records of race *pulih* killed at windows on Sierra Leone coast in May and from gardens in coastal Liberia in Oct, as well as others seen at artificial lights in Nigeria, suggest possible local movements or true migration; similarly, records of nominate race from towns in Congo and W Zaire during May-Jun and Oct may relate to migrants, possibly birds which breed in N Angola in Nov and move N for dry season. E African *longipennis* is chiefly a long-distance intratropical migrant, spending non-breeding season from Apr to Oct in equatorial region from S Central African Republic, N & NE Zaire, Uganda and S Kenya S to N Tanzania; regular migrant at L Kivu, in E Zaire, and at Kilima Tea Factory, in S Tanzania, 15 birds ringed during 1982-83 and 40 ringed between third week Apr and early May 1984; some probably migrate up to 2000 km. Migrates at night; frequently attracted to lights. Vagrants recorded N to S Ethiopia and S to SE South Africa.

**Status and Conservation.** Not globally threatened. Locally common to scarce or rare. Not uncommon in parts of Zambia and Zimbabwe; minimum of 6 pairs found in 28 ha of forest in Zambezi Valley, giving density of c. 43 birds/km<sup>2</sup>. In non-breeding range, common at Gedi, in SE Kenya, in Aug 1975, but few records from Kenya and N Tanzania since 1983. True status, however, is difficult to assess owing to this pitta's shyness and skulking behaviour; most reports from E Africa involve nocturnal migrants colliding with windows, but frequency of such reports suggests that it must still be locally common. Status of more sedentary W African populations little known; rare in Sierra Leone and Liberia; uncommon and local in SW Nigeria and Ivory Coast; rare in Ghana; common in Korup National Park, in Cameroon. Habitat destruction and fragmentation could represent a major problem, especially in W Africa. Only rarely seen in the cagebird trade.

**Bibliography.** Alexander (1994), Auber (1964), Baker & Baker (1992), Baker & Howell (1992), Bannerman (1953), Beakbane & Boswell (1984), Bennun & Njoroge (1999), Benson (1940, 1942, 1944), Benson & Benson (1977), Benson & Irwin (1964), Benson & White (1957), Benson *et al.* (1971), Berry & Ansell (1978), Black (1970), Borrow & Deme (2001), Bradley (1994), Britton & Rathbun (1978), Brown (1970), Burke (1969), Cheke & Walsh (1996), Christy & Clarke (1994), Clancey (1965), Clancey & Maclean (1980), Colston & Curry-Lindahl (1986), Dean (2000), Deme (2001a, 2001b), Dowsett & Dowsett-Lemaire (1991, 1993), Dowsett & Forbes-Watson (1993), Elgood (1977), Elgood *et al.* (1994), Fanshawe (1994), Fishpool & Evans (2001), Forbes-Watson (1972), Friedmann (1978), Gartshore *et al.* (1995), Gatter (1997), Gerhart (1970), Germain & Cornet (1994), Ginn *et al.* (1989),

Grimes (1987), Hall & Moreau (1970), Harrison, G. (1966), Harrison, J.A. *et al.* (1997), Harvey (1938), Howells (1985), Hustler & Ndlovu (2001), Irwin (1981), Keith *et al.* (1992), Lewis & Pomeroy (1989), Lloyd (1999), Mackworth-Præd & Grant (1957, 1962, 1970), Maclean (1993), Masters (1987), McBride (2000), McLachlan (1981), Mingwa (2000), Moreau (1966), Moreau & Moreau (1937), Rathbun (1978, 1999), Rodewald *et al.* (1994), Serle (1981), Sharpe (1903), Short *et al.* (1990), Smithers (1964), van Someren (1918), Stattersfield & Capper (2000), Stevenson & Fanshawe (2001), Steyn (1996), Tarboton (2001), Taylor (1979), Thiollay (1985), Urban & Brown (1971), Urban & Hakanson (1971), Waiyaki & Bennun (2000), Waltert *et al.* (1999), White (1961), Zimmerman *et al.* (1996).

## 18. Green-breasted Pitta

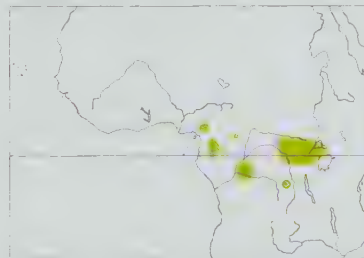
### *Pitta reichenowi*

**French:** Brève à poitrine verte **German:** Grünbrustpitta **Spanish:** Pita Pechiverde

**Taxonomy.** *Pitta reichenowi* Madarász, 1901, Middle Congo River, above Stanley Pool, Zaire.

Forms a superspecies with *P. angolensis*, and has been considered conspecific on basis of apparent intermediate birds from Cameroon and S Congo; doubts have been expressed, however, over identification of such birds (which could possibly have been nominate race of that species), and there seems little evidence of intergradation where the ranges of the two species approach each other. Monotypic.

**Distribution.** W & S Cameroon to N Gabon, and SW Central African Republic, W, SC & NE Zaire and SW Uganda (Budongo Forest S to Kabale and E to Jinja).



**Descriptive notes.** 17-19 cm. Has black head, broad golden-buff supercilium, rear supercilial feathers paler and erectile; upperparts deep green, rump and tail-coverts sky-blue, tail black; wing-coverts black with violet wash and tipped sky-blue, lesser coverts with much broader blue tips; flight-feathers blackish, tips paler, white patch on primaries; throat white, small black patch on lower throat, breast dull green with often golden-yellow gloss, belly and undertail-coverts red; iris red-brown; bill black; feet pinkish to greyish-white. Sexes alike. Dusky stripes found both on green and blue upperparts and on green breast of 46% of

24 adults examined (both sexes). Differs from *P. angolensis* mainly in green, not buff, breast, white throat, deeper green upperparts. Juvenile is much duller and browner than adult, buffish supercilium becoming slightly paler (but not white) at rear, duller blue in wing, pink belly and vent, orange bill with black central band. Voice. Short bell-like whistle 0.25-0.5 seconds long, repeated several times at rate of c. 10 per 14 seconds; "brrrt" or "prrrt" noise in flight, probably produced mechanically by wings.

**Habitat.** Old secondary forest with dense undergrowth and thickets apparently favoured, but also found in primary forest, at border of a swampy forest and in old plantations with forest regrowth; recorded in stands of mature ironwood (*Cynometra alexandri*) in Uganda. At 1100-1400 m in Uganda.

**Food and Feeding.** Hairless caterpillars, beetles and beetle larvae, termites (Isoptera), maggots, small millipedes (Diplopoda), small centipedes (Chilopoda), an orthopteran, a pillbug (Isopoda) and small snails found in stomachs. Foraging behaviour not documented.

**Breeding.** Eggs in May and Sept and fledglings in Jun and Nov in Cameroon, eggs in Gabon in Jan and in Uganda in May, and fledglings in May and birds with enlarged gonads in Oct-Nov in Zaire; probably breeds in most months. Nest fairly large, domed, with wide side entrance, built from a few large twigs and tough dead creeper stems interwoven with large mass of dead and skeletonized leaves, base a thick pad of rootlets, interior thickly lined with leaves, and placed 1.5-2.5 m up on more or less horizontal trunk or branch of tree, once in crown branches of fallen trunk. Clutch 2-3 eggs, creamy white with dark brown, red-brown and grey spots and blotches with grey-lilac underlying spots, most at larger end, c. 27 × 22 mm; a male captured while incubating, suggesting that both sexes incubate.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Very shy species, rarely seen; most reports concern individuals trapped by local people. In Cameroon, only three reports in period of three years in W (Mt Kupe), but more frequent in S. Locally common in Gabon and parts of Zaire in 1953, but present status there not known. Uncommon in Uganda. Provenance of specimen of a fledgling said to have been collected in Jul 1901 in SE Nigeria (Oguta), i.e. outside species' known range, requires confirmation. Probably overlooked as a result of its skulking behaviour; may be more widely distributed than currently realized. No known threats.

**Bibliography.** Bannerman (1936, 1953), Bates & Ogilvie-Grant (1911), Borrow & Deme (2001), Bowden (2001), Britton (1980), Brown & Britton (1980), Byaruhanga *et al.* (2001), Chapin (1953), Christy (1908), Collar & Stuart (1985), Dowsett (1989), Dowsett & Dowsett-Lemaire (1991, 1993, 1997), Dowsett & Forbes-Watson (1993), Fishpool & Evans (2001), Hall & Moreau (1970), Keith *et al.* (1992), Lippens & Wille (1976), Lloyd (1999), Louette (1981), Mackworth-Præd & Grant (1957, 1970), Pederson (2000), Prigogine (1984b), Schouteden (1954), Sharpe (1903), Short *et al.* (1990), Stattersfield & Capper (2000), Stevenson & Fanshawe (2001), White (1961), Williams (1963).

## 19. Azure-breasted Pitta

### *Pitta steerii*

**French:** Brève de Steere **German:** Azurbrustpitta **Spanish:** Pita de Mindanao  
**Other common names:** Steere's Pitta

**Taxonomy.** *Brachyurus Steerii* Sharpe, 1876, Dumalon, Mindanao, Philippine Islands.

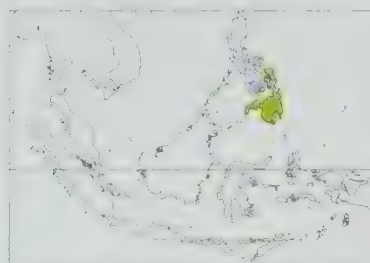
Has sometimes been considered closest to *P. superba* and *P. maxima*, or to form a superspecies with those and *P. sordida*, but morphological differences appear to be too great for this treatment to be acceptable; probably closest to last of those three. Race *coelestis* poorly differentiated, possibly not meriting taxonomic recognition. Two subspecies recognized.

#### Subspecies and Distribution.

*P. s. coelestis* Parkes, 1971 - C Philippines (Samar, Leyte, Bohol).

*P. s. steerii* (Sharpe, 1876) - Mindanao.





**Descriptive notes.** 19 cm; male 86-100 g, female 69-113 g. Adult has black head, dark green upperparts, green-blue uppertail-coverts, black tail; wings black, secondaries broadly edged greenish, wing-coverts conspicuously silvery greenish-blue; throat white, breast and sides azure-blue, centre of belly black, lower underparts scarlet; iris dark brown; bill black; feet light brown to flesh-coloured, joints pinkish. Sexes alike. Dusky stripes found both on green and blue upperparts and on azure underparts of 46% of 24 adults examined (both sexes). Juvenile is duller than adult, throat mottled, fewer blue feathers in wing, olive-green

upper breast, buffish below, orange tip and base of bill. Race *coelestis* differs only in having blue colours somewhat paler, less green-tinted. **Voice.** Five or more loud, explosive short "whirr", "kwo" or "kva" whistles in series c. 1-5 seconds long, repeated at intervals of 4-5 seconds; also loud "kwéiôô" repeated at 2-5-second intervals reported from Bohol.

**Habitat.** Forest with thick undergrowth, preferring limestone areas; also degraded forest on Mindanao. To 1000 m; to 600 m on Samar, and at 350-750 m on Bohol.

**Food and Feeding.** Insects and worms recorded. Forages on ground, fallen logs and boulders; flicks over dead leaves with bill.

**Breeding.** Almost unknown. Male with enlarged gonads in May and fully fledged juveniles in Jun on Samar, juvenile in Jul on Bohol, and immatures in Sept/Oct on Mindanao; calling heard mostly in Apr-Jun wet season, the period when most Philippine passerines breed. Nest and eggs undescribed. **Movements.** Sedentary.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Mindanao and the Eastern Visayas EBA. Rare; recorded from only three localities since 1980. Rare and local on Mindanao, where recent records only from Bislig on E coast and Zamboanga Peninsula in extreme W; possibly still present in Mount Hilong-Hilong Watershed Reserve in N, from where recorded before 1970; was probably widespread on the island in the past. On Bohol, reported regularly in recent years from Rajah Sikatuna National Park (9023 ha). Not reported from Leyte and Samar since 1964 and 1969, respectively. Large-scale destruction of lowland forest has occurred throughout its range, and is continuing. Most forest has now gone on Mindanao, and remaining forest cover at Bislig is being cleared and replanted with exotic trees for commercial production of paper. Almost all suitable forest has disappeared on Bohol, and even in the protected area of Rajah Sikatuna there are problems with illegal tree-cutting for firewood, fires, agricultural expansion and soil erosion. Very little forest remains on Samar and Leyte. Research and fieldwork are needed to determine the species' current status and distribution, and its ecological requirements; the significance of its apparent preference for limestone areas is not fully understood. Effective protection of Rajah Sikatuna is essential, as also is the identification and protection of other possible key sites. No reports of this species being captured for food consumption or the cagebird trade.

**Bibliography.** Anon. (1997a), Brooks *et al.* (1996), Collar & Andrew (1988), Collar, Andreev *et al.* (2001), Collar, Crosby & Stattersfield (1994), Collar, Mallari & Tabaranza (1999), Delacour & Mayr (1946), Dickinson, Dekker *et al.* (2000), Dickinson, Kennedy & Parkes (1991), Hachisuka (1934), Hornskov (1996), Johnson & Stattersfield (1990), Kennedy *et al.* (2000), Lambert (1993), McGregor (1909-1910), Parkes (1971, 1973), duPont (1971), Rand & Rabor (1960), Redman (1993), Stattersfield & Capper (2000), Strange (2000), Whitehead (1899).

## 20. Hooded Pitta

### *Pitta sordida*

**French:** Brève à capuchon **German:** Kappenpitta **Spanish:** Pita Encapuchada  
**Other common names:** Green-breasted(!)/Black-headed Pitta

**Taxonomy.** *Turdus sordidus* Statius Muller, 1776, Philippine Islands.

Recently treated as forming a superspecies with *P. superba* and *P. maxima*, sometimes also including *P. steerii*, but morphological differences seem too great for this treatment; probably closest to last of those three. The four New Guinea races *novaeguineae*, from which described race *hebetior* (from Karkar I, off N Papuan coast) considered indistinguishable, *mefoorana*, *rosenbergii* and *goodfellowi* are geographically isolated from others and show several plumage differences from them; may represent a separate species. Race *palawanensis* possibly better treated as synonymous with nominate. In original description, race *mulleri* was written thus (without umlaut), so this is correct spelling rather than *muelleri*. Twelve subspecies recognized.

#### **Subspecies and Distribution.**

*P. s. cucullata* Hartlaub, 1843 - Himalayan foothills from N India E to N Myanmar, S China (S Yunnan) and N Vietnam (W Tonkin), S to N Bangladesh, Thailand, S Laos and Cambodia; migrates S as far as Sumatra and Java.

*P. s. abboti* Richmond, 1902 - Nicobar Is.

*P. s. mulleri* Bonaparte, 1850 - extreme S Thailand, N Peninsular Malaysia, Sumatra, W Java, Borneo, and W Sulu Is (Sibutu).

*P. s. bangkana* Schlegel, 1863 - Bangka I and Belitung I.

*P. s. sordida* (Statius Muller, 1776) - Philippine Is (except Catanduanes, Masbate, Panay, and Palawan group), including Basilan and Sulu Is (Jolo, Tawitawi).

*P. s. palawanensis* Parkes, 1960 - W Philippines (Calauti, Busuanga, Culion, Palawan, Balabac).

*P. s. sanghirana* Schlegel, 1866 - Sangihe I.

*P. s. forsteni* Bonaparte, 1850 - N Sulawesi.

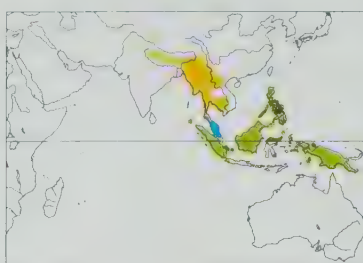
*P. s. novaeguineae* S. Müller & Schlegel, 1845 - New Guinea, including W Papuan Is.

*P. s. mefoorana* Schlegel, 1874 - Numfor I, in Geelvink Bay.

*P. s. rosenbergii* Schlegel, 1871 - Biak I, in Geelvink Bay.

*P. s. goodfellowi* C. M. N. White, 1937 - Aru Is, off S New Guinea.

**Descriptive notes.** 16-19 cm; 42-72 g. Adult of nominate race has entire head, including chin and throat, black, upperparts dark green, uppertail-coverts and large patch on wing-coverts turquoise-blue; flight-feathers black, secondaries edged green, variable white patch on primaries; tail black, tipped blue-green; breast and flanks blue-green, occasionally stronger blue, large black central belly patch, lower belly and undertail-coverts red; iris dark brown; bill black; feet pale brown to pinkish with silver-violet tinge to grey-blue. Female is sometimes slightly duller. Dusky stripes found on both green and blue upperparts and green underparts of 40% of 439 adults examined (both sexes, all races). Juvenile is duller than adult, red-brown forehead, dull greenish above, conspicuous white wing-covert band, white throat, buffy-orange breast becoming buff below, orange tip and base of bill, greyish-pink feet. Races differ mainly in general darkness of plumage, crown colour and amount of white in wing: *palawanensis* is very like nominate but a shade darker, juvenile darker brown below; *cucullata* is large, long-winged, has forehead to nape red-brown,



plumage rather pale in general, less black on belly; *abboti* resembles last but darker, more olive above, bluer below, less white in wing, smaller blue rump and wing patches; *bangkana* has variable amount of dark brown on crown; *mulleri* has entirely black head, black on belly reduced or absent; *sanghirana* differs from previous in more bluish tinge on breast, more black on belly, longer legs; *forsteni* is larger than previous, with longer wings and contour feathers, green tail, no white in wing; *novaeguineae* is darker, dark green above, little or no blue on rump, green tail, golden yellow-green breast, blue-green sides, black belly

patch, dark blue lower flanks, only little white in wing; *goodfellowi* is slightly smaller and darker than last; *rosenbergii* resembles last but more blue on rump, tail black, much darker below, breast washed dark blue without glittering breastband, more extensive dark ultramarine-blue on flanks, red lower breast to vent, no black on belly; *mefoorana* differs from previous in having glossy silver-blue upper breast, black belly patch. **Voice.** Call somewhat variable geographically: in much of range double-noted fluty whistle, "whew-whew" or similar, in Sundas often followed by shorter "whi" or "fi", repeated c. 3-second intervals often for several minutes, but in Borneo more as "quack-quack" repeated 4-35 times; on Nicobars (*abboti*) sharp monotone whistle of three or, rarely, four notes, similar to yelp of small puppy; in Philippines (*sordida*) "waup waup" c. 1 second long, but in Palawan (*palawanensis*) described as more fluty and disyllabic "hweew-hweew"; in New Guinea (*novaeguineae*) loud "wu-wi-wu-wi" with first note falling, second rising, or "kuhwhi-kuwee" with higher second note; much coarser-sounding call on Biak (*rosenbergii*); alarm a squeaky "skyew", in New Guinea "kiaw" sometimes followed by 1-2 low short rasps.

**Habitat.** Wide range of habitats occupied: all types of forest, especially primary riverine forest, secondary forest with heavy understorey or scrub, wet or dry forest, also peat-swamp-forest, dense bamboo jungle, overgrown rubber or coffee plantations, various other commercial plantations (e.g. coconut, nutmeg, *Albizia*), orchards and old gardens, forest clearings with mustard or rice cultivations, forest patches on broken grassland, even mangroves and sago swamps. Occasionally in unusually open habitats on migration. To c. 2000 m in India; mostly in lowlands in SE Asia, but to 915 m on migration; to 500 m in Sumatra, 650 m in Sulawesi and 1000 m in the Philippines; found at up to c. 500 m in New Guinea, locally to 1200 m.

**Food and Feeding.** Insects of many kinds, e.g. beetles, ants, termites (Isoptera), Orthoptera, cockroaches (Blattodea), bugs (Hemiptera), various larvae; also earthworms and snails, and once a leaf found in a stomach. Forages on forest floor among dead leaves, often two birds feeding 5-30 m apart; probes among litter, flicks and scrapes aside leaves. In India, seen to leap into air to catch alate termites.

**Breeding.** Eggs in Apr-Aug in India; in May-Oct in SE Asia, Dec-Apr in Borneo, Feb-Jun in Sulawesi and Dec-Jun in New Guinea; few records from Philippines suggest season May-Jun, but on Tawitawi (Sulu Is) a clutch found in third week Jul. Nest, built by both sexes, a football-sized flattened dome made of twigs, dead and skeletonized leaves, plant fibres, rootlets and moss, lined with finer material, often with a short "walkway" of twigs leading up to side entrance, placed on forest floor. Clutch 2-5 eggs, usually 3-4, white with brown and underlying greyish spots, average c. 27 × 21 mm (*cucullata*); both sexes incubate, period 15-16 days; both also feed and tend chicks, male perhaps taking greater share of duties; young fledge at c. 16 days, and in captivity were able to feed themselves c. 12 days later. Two individuals were recaptured 30 and 38 months respectively after they had been ringed.

**Movements.** Sedentary in most of range. Race *cucullata* mostly migratory, N populations making long-distance post-breeding migration to Peninsular Malaysia and Sumatra, while some possibly cross from mainland to Borneo; S movement mid-Oct to Dec, return in Apr-May; passage nocturnal, 1264 individuals trapped at Fraser's Hill (C Peninsular Malaysia) during 1965-1973. Race *mulleri* may also undertake some long movements in Sumatra and Borneo. In Philippines, nominate race apparently at least a partial short-distance migrant; 1264 individuals ringed at night at Dalton Pass (N Luzon) during 5-year period. Some nomadic movements in seasonally dry regions of New Guinea, from where birds apparently migrate to areas with moister ground that provides suitable foraging conditions.

**Status and Conservation.** Not globally threatened. Common and widespread to rare and local; within its wide distribution is perhaps the most common pitta species where suitable habitat remains. In NW of range locally common, but rare in India; relatively common in Nicobar Is. Rare in China (Yunnan), but fairly common to locally common in SE Asia; c. 10 pairs/km<sup>2</sup> estimated in patches of secondary forest in S Thailand; probably 13-14 pairs/km<sup>2</sup> in parts of non-breeding range in Peninsular Malaysia, and migrants also occur in Bukit Timah Nature Reserve, in Singapore. Rare in Sumatra and Java, but relatively common in Borneo. Uncommon to scarce and local in Sulawesi, but occurs in Lore Lindu and Dumoga-Bone National Parks and in Tangkoko-Dua Saudara Nature Reserve; common on Sangihe I. In Philippines, fairly common to common in some places (e.g. N Luzon and Siquijor) but rare and local in others (e.g. Leyte); occurs in St Paul Subterranean River National Park, on Palawan. Common and widespread in New Guinea and its islands; estimated 6 pairs/10 ha in lowland rainforest near R Brown (S Papua New Guinea). Occurs in several protected areas in addition to those mentioned. Has presumably declined or disappeared in areas where forest and other suitable habitat has been destroyed, but appears tolerant of degraded areas in many parts of range (e.g. N Philippines). This is one of the most frequently seen members of the Pittidae in the cagebird trade; has frequently been bred in captivity.

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21

*ssp erythrogaster*

*ssp dohertyi*

*ssp meeki*

*ssp gazellae*

*ssp novaehibernicae*

*ssp loriae*

*ssp macklotii*

*ssp rufiventris*

22

*ssp palliceps*

*ssp cyanonota*

*ssp splendida*

*ssp oblita*

*ssp caeruleitorques*

*ssp rubrinucha*

*ssp finschii*

*ssp inspeculata*

*ssp celebensis*

PLATE 9

inches

cm

4

10



## 21. Whiskered Pitta

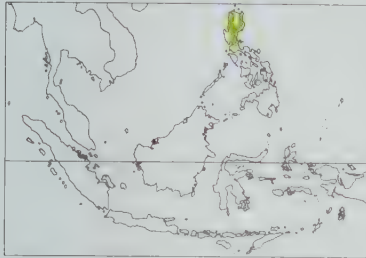
### *Pitta kochi*

**French:** Brève de Koch      **German:** Wangenstreifpitta      **Spanish:** Pita de Luzón  
**Other common names:** Koch's Pitta

**Taxonomy.** *Pitta Kochi* Brüggemann, 1876, Luzon, Philippine Islands.

Closely related to *P. erythrogaster*. Monotypic.

**Distribution.** Luzon, in N Philippines.



**Descriptive notes.** 22-23 cm; one female (fat) 116 g. Male has top of head dark brown, becoming rust-orange on hindcrown and nape; broad pale ash-brown malar stripe (whisker) extending to neck side; upperparts dull dark olive-green, rump and wing-coverts grey-blue, tail dull blue; small white patch on primaries visible in flight; throat and upper breast dark brown, broad blue breastband (often some green at sides), rest of underparts scarlet; iris dark brown to brick-red; bill black; feet brownish to slate-blue. Female differs from male in having fewer grey-blue wing-coverts, often paler red on underparts. Juvenile is mostly dark brown with whitish whiskers, paler below with whitish drop-like spots, pale yellow tip of bill and base of lower mandible. **VOICE.** Monotonous series 2-3 seconds long of 2-9 (usually 5) deep, mournful notes, "haaaawwwww haaww haaww haaww haaww-r" or "gooww-gooww-gooww-gooww", first note longest, following ones slightly accelerating and lower, final note slightly slurred, series repeated at intervals of 7-8 or more seconds, not unlike call of Amethyst Brown-dove (*Phapitreron amethystina*) but longer; also single-note alarm.

**Habitat.** Montane and submontane forest, preferably dominated by oak (*Quercus*) and with closed canopy, often on steep slopes, and with usually dense undergrowth; in higher-elevation mossy forest, rhododendron (*Rhododendron*) and ferns often common in understorey. Locally, e.g. at Mt Diplayag, also evergreen forest with open understorey on lower slopes. Tolerates selectively logged forest and degraded forest; has been observed in heavily degraded secondary forest with dense understorey and bamboo patches (Mt Hamut). Often inhabits areas where wild pigs (*Sus barbatus*) also present. Recorded at 300-2350 m, mostly above 1000 m; highest densities at 900-1500 m.

**Food and Feeding.** Only recorded food small beetles. Forages on ground; flicks aside dead leaves with the bill, digs into soil, sometimes watching or listening with head cocked on one side. Seems to prefer moist ground. Often associated with areas where foraging wild pigs have dug into soil, possibly taking advantage of exposed earthworms and other potential food items.

**Breeding.** Virtually unknown. Calls heard only end Feb-Jun (mostly Apr and Jun), food-carrying adult seen in Apr, and juveniles in Feb, Apr and May; discovery of immatures in late Jan, however, suggests possibly longer season, e.g. to Oct. Reported by local people to nest on ground or to 1 m up in bush, with eggs laid from early Feb.

**Movements.** Some possible movement, but not fully understood; migration or post-breeding dispersal suggested by records of birds trapped at migration watchpoint at Dalton Pass in Jan-Feb, and winter records from S Luzon.

**Status and Conservation.** **VULNERABLE.** **CITES I.** Restricted-range species; present in Luzon EBA. Strongholds are in mountains of Cordillera Central and Sierra Madre, in N of the island, and at Mt Isarog, in SE; a number of records from c. 15 localities since 1990. Occurs in several protected areas: Mount Data and Mount Pulog National Parks, in Cordillera Central, Northern Sierra Madre Natural Park and Maria Aurora Memorial National Park, in Sierra Madre, and Mount Isarog National Park. Other recent records from Mt Adams Peak, Mt Cagua, Mt Polis, Sabian, Balian, and the Angat Watershed (N of Manila). Latest surveys reveal that it is locally common in N Sierra Madre, e.g. at least 20 birds calling on Los Dos Cuernos in 1991 and up to 13 heard in one day on Mt Cetaceo. Uncommon to rare elsewhere, and everywhere local. Presumed to be declining, primarily as a result of extensive habitat loss. Despite the fact that 200,000 ha of Sierra Madre have been declared a Wilderness Area, supposedly to denote a protected World Heritage Site, logging and burning are continuing at an alarming rate, as in most parts of the Philippines; moreover, mossy forests in Cordillera Central are rapidly being converted to agricultural land; several important sites for this pitta are at serious risk of becoming unsuitable. In addition, poor local inhabitants use snares to trap terrestrial birds, both for food and for the cagebird market, putting further pressure on this species. Research is needed to determine its total distribution, precise ecological requirements, and the extent of any migratory movements, in order to plan necessary conservation strategies; and effective and full protection of all sites where it is known to occur.

**Bibliography.** Anon. (1989b, 1989c, 1994, 1997a), Buensuceso (1985), Collar & Andrew (1988), Collar, Andreev *et al.* (2001), Collar, Crosby & Stattersfield (1994), Collar, Mallari & Tabaranza (1999), Crosby (1997), Danielsen *et al.* (1994), Delacour & Mayr (1946), Dickinson, Dekker *et al.* (2000), Dickinson, Kennedy & Parkes (1991), Gonzales & Rees (1988), Goodman & Gonzales (1989, 1990), Hachisuka (1934), Jakobsen & Andersen (1996), Jensen (1991), Kennedy *et al.* (2000), McClure & Leelavit (1972), McGregor (1909-1910, 1920), Mitchell & Redman (1994), Morris (1997), Pitches (1997b), duPont (1971), Poulsen (1995), Stattersfield & Capper (2000), Strange (2000), Whitehead (1899).

## 22. Red-bellied Pitta

### *Pitta erythrogaster*

**French:** Brève à ventre rouge      **German:** Blaubrustpitta      **Spanish:** Pita Ventrirroja  
**Other common names:** Blue-breasted/Red-breasted Pitta; Macklot's Pitta (*macklotii*); Sula Pitta (*dohertyi*)

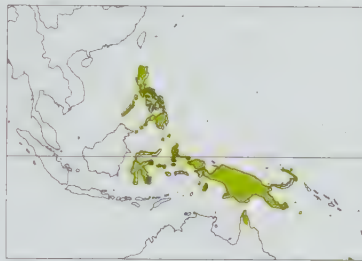
**Taxonomy.** *Pitta erythrogaster* Temminck, 1823, Manila, Luzon, Philippine Islands.

Closely related to *P. kochi*. Wide geographical variation in plumage, with some indication that coloration varies clinally, and also in voice. Distinctive race *dohertyi* sometimes treated as a separate species, mainly because it shows notable plumage differences and possibly differs vocally, but other intraspecific plumage variation is considerable, and claimed vocal differences remain uncertain; future research and DNA analysis may reveal that some other races, e.g. *inspeculata*, *novaehibernicae*, *rubrinucha* and *splendida*, should also be elevated to species rank; New Guinea taxa have sometimes been treated as separate species, *P. macklotii*. Other described forms include *thompsoni* (Calauit and Culion, in W Philippines), regarded as synonymous with highly variable nominate race; *obiensis* (Obi I, S of Halmahera), which is indistinguishable from *rufiventris*; and

*kuehni* (Kai Is) and *digglesi* (N Queensland, Australia), appearing to show no constant differences from *macklotii*, although Australian birds considered by some authors to be brighter and paler. Race *habenichti* perhaps also better merged with last. Twenty-three subspecies recognized.

#### Subspecies and Distribution.

*P. e. erythrogaster* Temminck, 1823 - Philippine Is (except Palawan group).  
*P. e. propinqua* (Sharpe, 1877) - Palawan and Balabac.  
*P. e. caeruleitorques* Salvadori, 1876 - Sangihe I.  
*P. e. inspeculata* A. B. Meyer & Wiglesworth, 1894 - Talaud Is.  
*P. e. paliceps* Brüggemann, 1876 - islands of Siao and Tahulandang, N of Sulawesi.  
*P. e. celebensis* S. Müller & Schlegel, 1845 - Sulawesi, including Manterawu and Togian Is.  
*P. e. dohertyi* Rothschild, 1898 - Banggai Archipelago and Sula Is, E of Sulawesi.  
*P. e. rufiventris* (Heine, 1859) - N Moluccas (Morotai, Halmahera, Moti, Bacan, Mandioli, Damar, Obi, probably also Kasiruta).  
*P. e. cyanonota* G. R. Gray, 1860 - Ternate, off W Halmahera.  
*P. e. bernsteini* Junge, 1958 - Gebe I (between Halmahera and Waigeo I).  
*P. e. rubrinucha* Wallace, 1862 - Buru, in S Moluccas.  
*P. e. piroensis* Muir & Kershaw, 1910 - Seram.  
*P. e. macklotii* Temminck, 1834 - W & S New Guinea, including W Papuan Is (Waigeo, Batanta, Salawati, Misoöl) and Yapen I in Geelvink Bay, and NE Australia (N & E Cape York Peninsula).  
*P. e. habenichti* Finsch, 1912 - N New Guinea (Weyland Mts E to Astrolabe Bay).  
*P. e. aruensis* Rothschild & Hartert, 1901 - Aru Is.  
*P. e. obliata* Rothschild & Hartert, 1912 - mountains of upper R Aroa, in SE New Guinea.  
*P. e. lorae* Salvadori, 1890 - extreme SE New Guinea (E from R Kumusi and Cloudy Bay).  
*P. e. extima* Mayr, 1955 - New Hanover, in Bismarck Archipelago.  
*P. e. novaehibernicae* E. P. Ramsay, 1878 - New Ireland.  
*P. e. splendida* Mayr, 1955 - Tabar I (E of New Ireland).  
*P. e. gazellae* Neumann, 1908 - S Bismarck Archipelago (Umboi, New Britain, Tolokiwa, Lolobau, Watom and Duke of York).  
*P. e. finschii* E. P. Ramsay, 1884 - D'Entrecasteaux Archipelago (Fergusson I, Goodenough I).  
*P. e. meeki* Rothschild, 1898 - Louisiade Archipelago (Rossel I).



**Descriptive notes.** 16-18 cm; male 50-65 g, female 46-70 g. Adult of nominate race has crown, nape and neck side deep red-brown, lores and supercilium dark brown, cheeks cinnamon; upper mantle blue, lower mantle and back dark green (variable), rump and tail blue; upperwing-coverts mostly deep blue; flight-feathers black, variably edged blue, inner secondaries mostly blue, variable small white spots on primaries; upper throat brownish, lower throat and upper breast black, sometimes with white throatband, a broad glossy blue band across breast becoming green at sides (variable), rest of underparts scarlet; iris dark

brown to reddish-brown, pale olive or bluish-slate; bill black; feet dark brown with lilac tinge to greyish-blue or pinkish-slate. Female is duller, more green and less blue on breast, red of underparts a shade paler. Small dusky stripes found on upperparts and blue breastband of 24% of 585 adults examined (both sexes, all races). Juvenile is dull brown above, rump and tail tip dull blue, paler below, throat whitish, breast with dark brown and off-white spots, bill dark horn, tip and base of lower mandible paler. Races vary considerably in plumage details: *propinqua* is very like nominate, but on average brighter and slightly smaller; *caeruleitorques* has top of head more uniformly brownish-red, brighter on nape, black band between blue breast and red belly; *celebensis* has variably sized blue stripe from midcrown to nape, more blue on breast with broad black band below; *paliceps* resembles last but paler, crown with less blue, little or no black on breast; *inspeculata* is distinctive, entire head dark chestnut-brown, upperparts all blue, breastband dark blue and narrow, iris grey-brown; *dohertyi* is also distinctive, with entire head, neck and throat black except for chestnut crown (variable), glossy green upperparts, also narrow light blue breastband with broad blackish band below, female with white iris; *rufiventris* has brighter reddish nape, dull dark green to dull blue rump, no blue on mantle, pale throat, more extensive blue on breast with thin black and greenish band below; *cyanonota* has nape bright rufous, upperparts dull blue, cheeks and throat pale buffy-brown, entire breast pale blue, sometimes thin black line below breast; *bernsteini* is marginally bigger than previous, slightly paler above, blue of breast silvery; *rubrinucha* has pale blue on rear crown centre and behind eye, small contrasting red area on nape, no blue on mantle; *piroensis* resembles previous, but darker green above, larger red nape patch; *macklotii* has forecrown, face and throat dark, hindcrown and nape bright orange-rufous, ear-coverts and a stripe over eye tinged blue, no blue on mantle, black lower breastband of extremely variable depth; *habenichti* is very like last, but nape brighter red or orange-red; *aruensis* resembles previous two but smaller, occasionally some blue on mantle; *lorae* has darker head and nape, sometimes narrow blue line on upper mantle, bill larger; *obliata* has nape pale yellow-brown, perhaps bluer (less green) upperparts; *novaehibernicae* has walnut-brown crown, contrasting reddish-orange nape, bluish ear-coverts, no black on throat or breast; *extima* is larger than last, with some blue feathers on midcrown, more bluish-green back; *gazellae* differs from last in usually stronger blue line on midcrown, redder crown side; *splendida* has nape scarlet, thin blackish hindcrown, upperparts deep blue, breast side blue; *meeki* is duller, throat more greyish, broad black lower breastband finely tipped red; *finschii* has crown to nape uniform dull dark chestnut, upperparts deep blue, female paler brown on chin and throat. **VOICE.** Varies geographically: in Philippines "waaaaauup aaaaawwwwww", first note vibrating and rising, second falling, c. 3 seconds long, repeated at intervals of 10-12 seconds; in New Guinea region "crooooooi-crooooouw" or "karaa-karaa" c. 4-5 seconds long, second note sometimes repeated once or, occasionally, twice; in N Australia a rasping "quor-eye-quor-or", last two notes drawn out, or harsh "kraa-kraa", on Sangihe, however, a more stuttering series of notes; in Sulawesi call shorter, 2-1 seconds, and hoarser, with second note longer than first and sometimes rising at beginning or end, also drawn-out mournful "oppo" between partners; on Obi a quite different "foh-foh"; race *dohertyi* (Banggai and Sula Is) thought to utter trisyllabic phrase followed by very brief pause and then descending series of five drawn-out notes that decrease in volume.

**Habitat.** Found in many habitats, from dense primary rainforest to logged or heavily degraded forest and scrub, plantations, remnant forest patches within cultivations, bamboo groves, and thickets near rivers. Often found in forest on volcanic soils in Sulawesi. Mostly in lowlands below 1200 m; to at least 1400 m in SC Philippines (on Negros), and recorded to c. 1800 m in New Guinea and to 2100 m in N Moluccas (Bacan).

**Food and Feeding.** Stomach contents included insects and their larvae, e.g. small beetles, also snails, earthworms, and even green plant material and maize (*Zea mays*) seeds. Foraging behaviour poorly known; feeds mostly on forest floor, mainly by gleaning, possibly also with some digging as not infrequently seen with dirt on bill. Reported as hopping on ground, now and then pausing to



inspect dead leaves, then again hopping, following irregular course, and occasionally flying up to c. 5 m between feeding sites. Possibly uses "anvils" to break snail shells.

**Breeding.** Over wide range breeding recorded in nearly all months: Nov-Sept in Philippines; singing males on territory in Jan-Mar, season probably to Oct, in Sulawesi; probably in most months in Moluccas, and nests with eggs in Nov (Buru); Mar-Jun in W & N New Guinea and probably mostly Apr-Oct in S & E; mostly during Dec-Apr rains in Bismarck Archipelago; Jan-Feb in Australia. Domed nest c. 17-22 cm in diameter, with side entrance c. 5-6 cm across, built of twigs and leaves, some skeletonized, grass and ferns, held together with cotton or hairy plant materials, most often placed on ground or low in scrub or tree, rarely to 10 m above ground. Clutch normally 2 eggs, occasionally 3 or 4 (but usually 3 in Australia), creamy white, spotted and blotched brownish to purplish-brown with grey-lilac underlying spots, average size in Philippines (*erythrogaster*) 27 × 20 cm; both sexes incubate, female probably taking greater share of duties; incubation and fledging periods not documented.

**Movements.** Sedentary over much of range. Some short local movement in Philippines: in five-year study at Dalton Pass (N Luzon), c. 2000 individuals trapped at night during Sept-Dec, of which nine recaptured at same site within 2 months and one caught 3 years later at locality 48 km to NW; also, individuals sometimes captured on boats up to 6 km offshore, e.g. off Luzon and Leyte. Possibly some nomadic movements in New Guinea and Wallacea, perhaps when forest floor is so dry that it makes foraging difficult. Apparently migratory in NE Australia, where generally absent May-Dec, although a few possibly resident; believed to migrate N to S New Guinea as recorded on islands in Torres Strait, but few data.

**Status and Conservation.** Not globally threatened. Race *dohertyi* currently considered Near-threatened. Fairly common locally in Philippines, but rare on Mindoro, Palawan, Negros and Leyte; rare in Rajah Sikatuna National Park, on Bohol. Locally common in Sulawesi, where occurs in Lore Lindu and Dumoga-Bone National Parks and in Tangkoko-Dua Saudara Nature Reserve. Recorded in low densities on Halmahera, but common and widespread on Bacan, Obi and Buru; very rare on Seram, where present in Manusela National Park. Little information on

New Guinea populations, but probably common in many areas; density of c. 30 birds/km<sup>2</sup> estimated at one study site in SE. Locally common in NE Australia. On the Banggai and Sula Is, race *dohertyi* (recently treated by some authors as a full species) is an uncommon and local inhabitant of lowland evergreen forest below 200 m; this habitat, which has already suffered serious alteration, is subject to increasing levels of clearance, degradation and disturbance; although this taxon tolerates secondary habitats, it is thought to be declining within its small range. The species' conservation status on many small islands is not known, but extensive deforestation which takes place on a good number of these may be a major threat to the pitta's survival. In various parts of its range additional pressure comes from hunting; in N Luzon, for example, many pittas are caught for local consumption or to be sold alive to pet shops.

**Bibliography.** Bailey (1992), Barker & Vestjens (1990), Beehler & Finch (1985), Beehler *et al.* (1986), Bell (1982a, 1982b, 1982c), Beruldsen (1980), Beruldsen & Uhlenhuth (1995), Bishop (1977, 1992), Blakers *et al.* (1984), Bowler & Taylor (1989), Britton (1991, 1992), Brooks, Dutton, Gabutero & Timmins (1995), Brooks, Dutton, King & Magsalay (1996), Brooks, Magsalay *et al.* (1995), Bruce (1986), Catterall (1997), Coates (1990), Coates & Bishop (1997), Collar, Andreev *et al.* (2001), Collar, Crosby & Stattersfield (1994), Crosby (1995b), Danielsen *et al.* (1994), Davidson & Stones (1993), Davidson, Lucking *et al.* (1992, 1994), Davidson, Stones & Lucking (1995), Diamond (1972), Dickinson & Dekker (2000), Dickinson, Dekker *et al.* (2000), Dickinson, Kennedy & Parkes (1991), Draffan *et al.* (1983), Erritzoe (1995), Evans *et al.* (1993), Filewood *et al.* (1972), Fletcher (2000a, 2000b), Fulton & Boles (2002), Gibbs (1994), Gilliard (1950), Gilliard & LeCroy (1967a, 1967b, 1970), Gonzales (1983), Greenway (1966), Gregory (1995a), Heaney & Regalado (1998), Hicks (1988), Higgins *et al.* (2001), Hornbuckle (1996), Indrawan *et al.* (1997), Inskipp *et al.* (1996), Isherwood *et al.* (1997), Jepson (1993), Kennedy *et al.* (2000), Lambert (1994), Layton (1969), Leavesley & Leavesley (2000), Mackay (1970), Mayr & Gilliard (1954), Mayr & Rand (1937), McClure (1998), McClure & Leelavit (1972), Mees (1982), Niland (1986), Officer (1968), Parkes (1973), duPont (1971, 1972), duPont & Rabor (1973), Porter (1933a), Poulsen (1995), Prescott (1973), Rabor (1977), Rand & Gilliard (1967), Riley (1997a, 1997b, 2002), Ripley & Rabor (1958, 1962), Rothschild (1899), Rozendaal & Dekker (1989), Schodde & Mason (1999), Simpson & Day (1998), Stattersfield & Capper (2000), Stones *et al.* (1997), Storr (1973, 1984), Watling (1983), White & Bruce (1986), Whitehead (1899), Zimmermann (1996).





23

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26

*ssp virginalis**ssp elegans**ssp maria**ssp versicolor*

28

*ssp simillima**ssp vigorsii*

27

*ssp concinna**ssp nigrifrons**ssp anerythra*

29

*ssp pallida*

30

*ssp iris**ssp johnstoneiana*

PLATE 10

inches

4

cm

10



## 23. Indian Pitta

### *Pitta brachyura*

**French:** Brève du Bengale

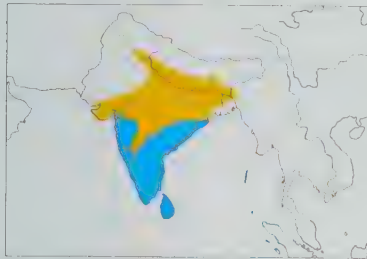
**German:** Bengalenpitta

**Spanish:** Pita India

**Other common names:** Bengal/Blue-winged(!)/Green-winged Pitta

**Taxonomy.** [*Corvus*] *brachyurus* Linnaeus, 1766, Moluccas and Sri Lanka; error = Sri Lanka. Forms a superspecies with *P. nympha*, *P. moluccensis* and *P. megarhyncha*. Formerly treated by many authors as conspecific with first of those, but differs in morphology, plumage and vocalizations. Has also been treated as conspecific with *P. elegans*. Monotypic.

**Distribution.** Breeds in NE Pakistan (Margalla Hills) and in foothills of Himalayas from W Himachal Pradesh (Dharmasala, Kangra) E to Sikkim and Bangladesh (has probably bred), and S to W & C India (S to Gujarat, extreme N Karnataka, E Maharashtra and C Bihar); migrates S to S India and Sri Lanka.



**Descriptive notes.** 18 cm; 47-66 g. Adult has top of head dark buff with black central stripe, white supercilium, broad black band from lores to nape with conspicuous white line beneath eye; upperparts dark green, rump blue, tail black with dull blue tip, large glossy blue patch on lesser wing-coverts; flight-feathers blackish, tipped pale, large white patch on primaries and white tips to inner secondaries; chin and throat whitish, rest of underparts golden buffish except for scarlet belly centre and undertail-coverts; iris dark brown; bill black, feet pinkish. Sexes alike. Dusky stripes found on green and blue upperparts of 54% of 160

adults examined (both sexes). Differs from *P. nympha* in slightly smaller size, head pattern, darker underparts, less extensive red below. Juvenile is duller than adult, little or no pinkish on belly, orange bill with black near tip. **VOICE.** Call a short double whistle, "weeet-pyou", "wee-tiou" and similar, sometimes likened to the words "quite clear", second note descending, the whole occasionally preceded by additional brief note, often accompanied by harsh notes, and repeated 3-4 times in 10 seconds for several minutes in breeding period; more rarely, single "weeew"; also other harsher sounds, e.g. "chee".

**Habitat.** Inhabits deciduous and evergreen forest with dense undergrowth in lowland and foothills, as well as scrub and bamboo jungle or sal (*Shorea*) forest; also found in dried-out riverbeds with grassy banks. Breeds in moist ravines and thick thorny bushes in Pakistan. Non-breeding visitors in Sri Lanka occur in thick forest and secondary jungle, and on initial arrival also often found in gardens or coffee plantations and even town parks. Present up to 1700 m in India, but only up to 1200 m during breeding; at 450-750 m in Pakistan; up to 1800 m, but mostly lower, in Sri Lanka.

**Food and Feeding.** Various insects, such as termites (Isoptera) and ants, insect larvae, also earthworms, small snails, millipedes (Diplopoda); reported to take dipteran maggots from human excrement near villages, and seen to consume larvae of coffee beetle from manure. Young fed on orthopterans, especially mole-cricket (Gryllotalpidae), at one nest. Forages on ground in manner of a thrush (Turdidae), tossing aside leaves, digging with bill in wet soil. Maintains feeding territories in non-breeding areas.

**Breeding.** Breeds in rainy season, May-Aug, rarely Apr and Sept; Jul-Aug in Pakistan. Nest c. 20 × 15 × 15 cm, shaped like a rugby football, with side entrance, built of twigs, bamboo leaves, grass, moss and fibrous roots, often lined with fine leaves, and placed 3-4 m, sometimes to 15 m, above ground in tree, occasionally on ground. Clutch 4-6 eggs, usually 5, glossy china-white with fine red-brown and underlying grey-lilac spots, mostly at broad end, average c. 25 × 21 cm; both parents incubate and both feed chicks: in captivity, incubation period 17 days, fledging period 15 days, young independent 5 days later.

**Movements.** Migratory; spends non-breeding season in peninsular India (mostly S of Maharashtra and Madhya Pradesh) and Sri Lanka. Departure from breeding grounds from Aug, some not leaving until Oct (e.g. in Pakistan), with migrants recorded in Sept-Oct in C India, and reaching Sri Lanka mid-Oct; return starts Apr, arrival in N breeding areas mostly in late May. Migrates at night, in small flocks.

**Status and Conservation.** Not globally threatened. Fairly common to scarce, and local. Population in Pakistan (Margalla Hills) estimated to be 18-20 pairs in 1982. Fairly common but local in India; in N fairly common at Dehra Dun; was formerly common at several places, with large numbers recorded on passage in the peninsula, but obviously declined in 20th century. In Nepal, common summer visitor only in Chitwan National Park; local elsewhere, and rare at Sukla Phanta and Bardia. Rare in Bangladesh; recorded only at Modhupur Forest, where probably bred in 1989, but no other information. Status in NE Indian Subcontinent uncertain; has been said to occur in Arunachal Pradesh, Assam (where villagers claim to have caught migrants in S) and Manipur, but no documented records; further fieldwork required to determine this species' true distribution. Fairly widespread in S India outside breeding season, with non-breeders present in at least four protected areas in Western Ghats; common winter visitor in Sri Lanka, where present in Yala, Bundala and Uda Walawe National Parks and in Sinharaja Forest Reserve. Although this pitta appears to be reasonably tolerant of human disturbance, clearing of forest for agriculture and urban development pose increasing problems in India, with its high human population. Moreover, large numbers of this species are caught while on migration, almost solely for food. The cagebird trade appears to be relatively insignificant; e.g. in 1986 only 70 birds were known to have been traded.

**Bibliography.** Abdulali (1976), Ali (1962, 1969, 1996), Ali & Ripley (1983), Allen *et al.* (1997), Badshah (1968), Baker & Inglis (1930), Barua & Sharma (1999), Betham (1922), Biswas (1961), Bolster (1921), Choudhury (1990), Daniels (1986), Dickinson & Dekker (2000), Dickinson *et al.* (2000), Donald (1918), Everett (1974), Ewins (1992), Fleming *et al.* (1976), Gay (1996), Gokula & Vijayan (1997), Grimmett *et al.* (1998), Harrison (1999), Harvey (1990), Henry (1971), Ingahlalikar (1977), Inglis (1920), Inskipp & Inskipp (1991), Islam (1979), Johnson, J.M. (1972), Kannan (1998), Kazmierczak (2000), Kotagama (1985), Kotagama & Fernando (1994), Kurup & Zacharias (1994), Lainer (1999), Lambert (1996), Millington (1997), Mohan (1997), Monga & Naoroji (1983), Mukherjee (1995), Neelakantan (1963), Pandav (1997), Pandey *et al.* (1994), Phillips, R. (1902), Phillips, W.W.A. (1978), Pittie (1997, 1998), Prabhakar (1998), Ranawana & Bambaradeniya (1998), Rane (1984), Reid-Henry (1958), Ripley (1982), Roberts (1992), Saha & Dasgupta (1992), Santharam *et al.* (1996), Shrestha (2000), Singh (1994),

Smith (1983), Stattersfield & Capper (2000), Stuart Baker (1934), Stuy (1969), Sugathan & Varghese (1996), Thomsen *et al.* (1992), Tyabji (1994), Vaurie (1959), Wijesinghe (1994), de Zylva (2000).

## 24. Fairy Pitta

### *Pitta nympha*

**French:** Brève migratrice

**German:** Nymphenpitta

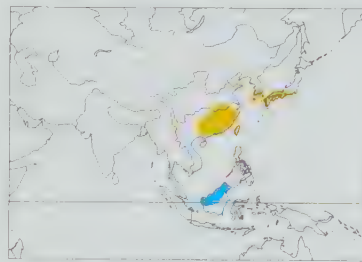
**Spanish:** Pita Ninfa

**Other common names:** Lesser Blue-winged/Chinese/Swinhoe's Pitta

**Taxonomy.** *Pitta nympha* Temminck and Schlegel, 1850, Korea.

Forms a superspecies with *P. brachyura*, *P. moluccensis* and *P. megarhyncha*. Formerly treated by many authors as conspecific with first of those, but differs in morphology, plumage and vocalizations. Monotypic.

**Distribution.** E & SE China, S Korea, S Japan and Taiwan; migrates S to N Borneo.



**Descriptive notes.** 19 cm; 67-155 g. Adult has top of head chestnut with black median stripe, pale buffish supercilium, broad black band from lores and beneath eye to nape; upperparts dark green, rump pale blue, tail black with green-blue tip; blue lesser upperwing-coverts; flight-feathers black, secondaries edged blue to green, large white primary patch; throat whitish, breast and flank dirty buff with strong green tinge, lower breast, belly and undertail-coverts scarlet; iris dark brown; bill black; feet pale brown-lilac. Sexes alike. Dusky stripes found on green and blue upperparts of 40% of 30 adults examined (both sexes). Differs from

*P. brachyura* in larger size, head pattern, no white beneath eye, paler underparts with red extending farther forward on to breast. Juvenile is much duller, with large white spots on median wing-coverts, bill dark brown with scarlet-orange tip. **VOICE.** Clear whistle, "kwah-he-wwa-wu", similar to that of *P. moluccensis* but longer and slower; "kriaih" or "kahei-kahei" as alarm; in captivity, "zip" or "hyp" often heard.

**Habitat.** In S Korea and Japan prefers moist lowland and foothill forest with thick undergrowth, especially near streams, but occasionally breeds in plantations in Japan; also occurs in scrub jungle and light deciduous forest in China, and found in scarcely populated wooded areas and bamboo groves in Taiwan. Present in lowlands and up to 1200 m, but in Japan mostly below 500 m; up to 1300 m in Taiwan. In non-breeding range, occurs in mixed dipterocarp forest and primary forest, to c. 1100 m.

**Food and Feeding.** Beetles, ants, centipedes (Chilopoda) and snails reported. A pair studied in Taiwan fed nestlings almost solely on earthworms. In captivity, observed to use stone as an "anvil" for smashing snail shells. Foraging behaviour little known; spends much time on ground, where seeks food among leaf litter. Birds on passage sometimes feed in more open areas, showing little fear of humans.

**Breeding.** Season May-Jul in Japan and Taiwan and May-Jun in Korea. Domed nest up to 45 cm wide (in one case only c. 20 cm in diameter) and 40 cm high, with side entrance, constructed mostly of twigs with a few leaves, lined with moss and finer material, sometimes with platform of twigs in front of entrance, placed 2-7.5 m up in fork of tree or in rock cleft. Clutch 4-6 eggs, creamy white with fine purple-brown spots; both parents feed young; incubation and fledging periods not recorded.

**Movements.** Long-distance migrant; non-breeders present in Borneo mid-Oct to Mar. Movements poorly understood; may have two distinct flyways, or take W route in autumn and more direct E route in spring. Most N populations probably move S through China, then across sea to N Borneo; rare passage migrant in Vietnam (E Tonkin, N & C Annam) in both autumn and spring, mainly in Apr; possibly resident in SE China (Guangxi, Guangdong). Japanese population leaves in Aug-Sept, returning in mid-May; some birds from there and from S Korea possibly move only as far as S China, but large numbers recorded in Taiwan in spring during 1980s suggest non-breeding quarters farther S, with possible return route through Philippines (no documented records) and then N c. 1100 km across East China Sea. Biometrics indicate that migrants collected on E China coast (near Shanghai) originated from Korea and Japan, while 8 specimens from Borneo appeared to be from S China.

**Status and Conservation.** **VULNERABLE.** CITES II. Rare; global population probably no more than a few thousand individuals. Protected by law throughout breeding range; occurs in several protected areas, including Keoje Island Natural Monument, in S Korea, and Kirishima-Yaku National Park, in Japan. Rare in Japan, with most birds seen on S Honshu, Shikoku and Kyushu; best-studied site is Mi-ike, in SW Kyushu, where c. 20 birds recorded in most years. Rare and local in S Korea, with fewer than 20 breeding pairs in 1994 on islands off S coast. Uncommon to rare in Taiwan, but estimated 20 pairs in a 70-ha forest around Hubei, in W; formerly more common on the island, and hundreds recorded on migration each year. China has been assumed to be the stronghold of this species, and it was once locally common in S, but appears now to be rare throughout range. Generally reported as rare to occasionally locally common in Bornean non-breeding range, but confusion with commoner *P. moluccensis* cannot be excluded. Large-scale deforestation the main threat, especially in China, where most lowland forest has been cleared and remaining areas are subject to further destruction through uncontrolled fires. Despite legal protection, human disturbance and hunting are additional problems in Taiwan and S Korea, as well as in China, and are thought to have contributed to this pitta's decline. In the past very large numbers were trapped in spring in Taiwan for the cagebird trade, adversely affecting not only the local population but also those farther N; with far fewer pittas now seen there, this practice has largely ceased. The possibility that a great many individuals are ocean-crossing migrants may also contribute to the species' vulnerability. Surveys urgently needed in order to establish its precise current distribution and population size, and to determine any habitat management that could benefit it. Priorities include effective protection of habitats where it is known to occur, and prevention of hunting and other disturbance.

**Bibliography.** Anon. (1992b), Austin (1948), Austin & Kuroda (1953), Banks (1949), Beaman (1994), Brazil (1991), Carey *et al.* (2001), Chalmers (1986), Cheng Tsohsin (1987), Collar & Andrew (1988), Collar, Andreev *et al.* (2001), Collar, Crosby & Stattersfield (1994), Crosby (1995a), Dickinson & Dekker (2000), Dickinson, Dekker *et al.* (2000), Dickinson, Kennedy & Parkes (1991), Duckworth & Kelsch (1988), Ellis (2002), Échécopar & Hùe



(1983), Fiebig (1995), Fogden (1965, 1970, 1976), Gore & Won Pyongoh (1971), Hachisuka & Udagawa (1951), Harrison (1964), Hayashi, M. (1982), Hayashi, T. (1959), Huang (2000), Inskipp *et al.* (1996), Ito (1937, 1938), Kennerley (1987), Kobayashi (1937), Ku Changtung (1957), Kuroda (1953), Lambert (1996), Lewthwaite (1996), MacKinnon & Phillips (1993, 2000), Mann (1987), Mees (1977), Meyer de Schauensee (1984), Morioka (1998), Odum *et al.* (1961), Ogasawara (1969), Pang Bingzhang (1981), Phillips (2000), Robson (2000d), Seeveringhaus, L.L. *et al.* (1991), Seeveringhaus, S.R. & Blackshaw (1976), Smythies (1999), Stattersfield & Capper (2000), Tashiro & Isozaki (1992), Ueno (1999), Vaurie (1959), Wang Sung (1998), Webster (1975), Yamashina (1982), Zhang Fuyun (1981), Zheng Guangmei & Zhang Cizu (2002).

## 25. Blue-winged Pitta

### *Pitta moluccensis*

**French:** Brève à ailes bleues

**German:** Kleine Blauflügelpitta

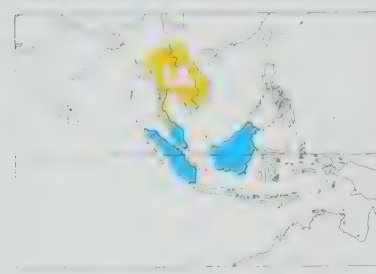
**Spanish:** Pita Aliazul

**Other common names:** Lesser Blue-winged/Little Blue-winged/Moluccan Pitta

**Taxonomy.** *Turdus Moluccensis* Status Muller, 1776, Moluccas; error = Malacca.

Forms a superspecies with *P. brachyura*, *P. nympha* and *P. megarhyncha*. Sometimes considered conspecific with last, but differs in morphology, plumage pattern and behaviour, separated ecologically, and no apparent interbreeding where ranges come into contact. Has also been treated as conspecific with *P. elegans*. Monotypic.

**Distribution.** Breeds from S & E Myanmar (S to Tenasserim) and S China (S Yunnan) through Thailand (except C and most of E), Laos, Cambodia and Vietnam (Annam, Cochinchina) to N Peninsular Malaysia (Langkawi I, Perlis); migrates to Sumatra and Borneo (possibly breeds).



**Descriptive notes.** 18-20 cm; 54-146 g. Adult has blackish head with broad buffy brown sides of crown and buffy supercilium; upperparts dark green, rump turquoise-blue, tail black with blue-green tip; inner half of wing turquoise-blue, primaries black with broad white band; throat white, rest of underparts cinnamon-buff, with centre of belly to undertail-coverts crimson; iris red-brown to dark brown; bill blackish; feet range from pale brown with lilac tinge to pale fleshy. Sexes alike. Dusky stripes found on green and blue upperparts of 41% of 238 adults examined (both sexes). Differs from *P. megarhyncha* in prominent supercilium, brighter coloration in prominent supercilium, brighter coloration in prominent supercilium, brighter coloration in prominent supercilium.

ours, smaller bill. Juvenile is a duller version of adult, paler crown edged dark brown, no red on belly, bright red base and tip of bill. Voice. Loud clear "taew-laew", second note stressed, usually doubled as "taelaew-taew" or "taew-taew", lasting less than 1 second, repeated every 3-5 seconds; alarm a harsh "skyeew".

**Habitat.** Found in variety of habitats, from moist or dry primary forest with dense or sparse undergrowth to mixed deciduous forest, secondary forest, scrub, bamboo; also mangroves, plantations and even parks and gardens on migration. Lowlands to 800 m; to 1800 m on migration and in non-breeding range.

**Food and Feeding.** Diet includes many kinds of insects, e.g. scarab beetles (Scarabaeidae), grasshoppers (Acrididae), hornets (Vespidae), ants, fireflies or glow-worms (Lampyridae) and coreid bugs, and variety of insect larvae; also takes spiders, earthworms, snails and crustaceans (crabs, shrimps). Uses stones as "anvils" when cracking snail shells. Forages on ground; hops in manner of a thrush (Turdidae).

**Breeding.** Apr-Aug. Nest 15-25 cm in length and 13-20 cm in height and width, sometimes with platform extending c. 10 cm in front of side entrance, a very untidy structure mostly of twigs, leaves (often of bamboo) and roots, lined with fibres, and usually placed on ground, occasionally up to 4 m up in tree or palm. Clutch 3-7 eggs, normally 4-5, whitish to lilac-grey with purple spots and scribbles, average c. 26 × 21 mm; both sexes incubate, period 18 days in captivity; no information on nestling period. Longevity at least 5 years 7 months in the wild.

**Movements.** Migratory; probably resident in extreme S of range in Malay Peninsula, and possibly also in extreme S Myanmar (S Tenasserim). Otherwise a long-distance migrant, with non-breeding quarters in Peninsular Malaysia, Sumatra and its islands and Borneo. Leaves breeding grounds in Sept, peak passage through Peninsular Malaysia second half Oct; return from late Mar, most arriving back in breeding areas from mid-Apr. Vagrants recorded from many areas, e.g. SE China (Hong Kong, Fujian), Philippines (Palawan, Basilan), Sulu Is (Tawitawi), N Sulawesi, and in E Indian Ocean on Christmas I; one vagrant even appeared in C China, in SW Gansu, at an elevation of 2980 m; also, four records from NW Australia, including singles in Nov 1994 and Dec 1995.

**Status and Conservation.** Not globally threatened. Widespread and fairly common to locally common over most of its range; rare in China. Density in patches of secondary forest in peninsular Thailand estimated at c. 10 pairs/km<sup>2</sup> in late 1980s. Status in Borneo unclear; although generally considered only a non-breeding visitor, several records suggest possible breeding, e.g. a female in Sabah at end Dec with well-developed brood patch and slightly enlarged oviduct, and reports of calling throughout year in E & C parts of island; further fieldwork required. Occurs in several protected areas throughout range, e.g. Khao Yai and Kaeng Krachan National Parks, in Thailand, Nam Bai Cat Tien National Park, in Vietnam, and during non-breeding period Taman Negara National Park, in Peninsular Malaysia, and Bukit Timah Nature Reserve, in Singapore. Not dependent on primary forest; fairly tolerant of habitat alteration, and able to survive well in secondary habitats. Hunted for food in some areas (e.g. Thailand), and figures prominently in the cagebird trade. Has been bred in captivity.

**Bibliography.** van Balen & Prentice (1997), Bangs & Van Iyne (1931), Barker & Vestjens (1990), Batchelor (1959), Benson (1970), Bransbury *et al.* (1994), Blunkill & Chasen (1990), Carey *et al.* (2001), Casement (1989), Cheng Isohsin (1987), Coates & Bishop (1997), Deignan (1945), Delacour (1951), Delacour & Jahouille (1940), Dickinson & Dekker (2000), Dickinson, Dekker *et al.* (2000), Dickinson, Kennedy & Parkes (1991), Duckworth *et al.* (1999), Dymond (1994), Eames & Eriksen (1996), Eames & Lambert (1994), Eames & Robson (1992), Ellis (2002), Evans, G.H. (1904), Evans, I.D. & Timmins (1998), Fogden (1965), Higgins *et al.* (2001), Holmes (1994, 1997), Holmes & Burton (1987), Holmes & Nash (1991), Inskipp *et al.* (1996), Jeyarajasingam & Pearson (1999), Johnstone & Hamilton (1995), Junge & Kooman (1991), Lambert (1996), Lekagul & Round (1991), Lewis *et al.* (1989b), MacKinnon & Phillips (1993, 2000), Madoc (1976), Mann (1988), van Marle & Voous (1988), McClure (1998), McClure & Osman (1968), Medway & Wells (1963, 1970, 1976), Mees (1971, 1986), Meissner (1986), Nilsson (1989, 1990), Pizzey & Knight (1997), Rajathurai (1996), Riley (1938), Robson (1989a, 1994, 1997a, 2000d, 2001), Robson *et al.* (1993b), Round (1988), Serventy (1968), Showler (1992), Simpson (1982), Simpson & Day (1998), Smythies (1986, 1999), Stattersfield & Capper (2000), Thewlis *et al.* (1998), Verheijen (1976), Wells (1972, 1974, 1985b, 1990c, 1992), White & Bruce (1986), Whitehouse (1988), Wilkinson, Dutson & Sheldon (1991), Wilkinson, Dutson, Sheldon, Noor & Noor (1991), Williams (1991).

## 26. Mangrove Pitta

### *Pitta megarhyncha*

**French:** Brève des palétuviers

**German:** Große Blauflügelpitta

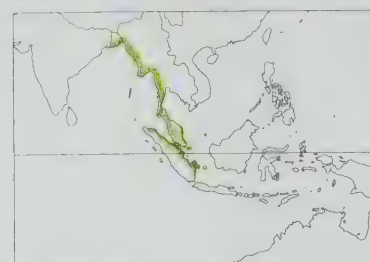
**Spanish:** Pita de Manglar

**Other common names:** Larger Blue-winged/Malay Pitta

**Taxonomy.** *Pitta megarhyncha* Schlegel, 1863, Bangka, off south-east Sumatra.

Forms a superspecies with *P. brachyura*, *P. nympha* and *P. moluccensis*. Sometimes considered conspecific with last, but differs in morphology, plumage pattern and behaviour, separated ecologically, and no apparent interbreeding where ranges come into contact. Monotypic.

**Distribution.** S. Bangladesh patchily S on coast to W peninsular Thailand, W & E Peninsular Malaysia, E Sumatra, Riau Archipelago and Bangka I.



**Descriptive notes.** 18-21 cm; 92-120 g. Adult has top of head grey-brown, sometimes with indistinct thin black median stripe, broad black band from lores back to nape; upperparts dull dark green, rump glossy violet-blue, tail black with green or blue tip; inner half of wing glossy ultramarine with violet wash, primaries black with large white patch; throat whitish, rest of underparts cinnamon-buff, mid-belly to undertail-coverts scarlet; iris dark brown; bill black; feet dark flesh-coloured. Sexes alike. Dusky stripes found on blue and green wing-coverts on only one of 23 adults examined (both sexes). Differs from *P. moluccensis* in

rather duller plumage, no supercilium or only narrow line behind eye, longer and stronger bill. Juvenile is duller, little or no ultramarine in wing, belly patch pinkish, bill with red gape. Voice. Loud and clear "hhwa-hwa" or "wieuw-wieuw" or "tu-will" c. 1 second long, first note rising, second more even, repeated at intervals of c. 4 seconds, apparently also given loudly from nest; alarm "skyeew" or "keew".

**Habitat.** Coastal mangroves; also recorded from river borders in tidal areas, including inland where mangroves or nipa palms (*Nypa fruticans*) still occur.

**Food and Feeding.** Molluscs, as well as ants and other insects, found in stomachs; diet thought to consist chiefly of crabs, for which the large bill is particularly suitable. Forages on mud around mangrove roots and in adjacent drier areas; at times ventures on to more exposed areas of mud on seaward side, where also seen to perch on moored boats.

**Breeding.** Apr-Aug. Domed nest c. 45 cm in diameter, constructed of sticks, dead leaves, grass and coconut fibres, sometimes with mud over roof, on solid platform of long sticks which extends in front of side entrance; usually placed on ground, once on top of mound made by mud-lobster (Thalassinidae), but not infrequently up to 1.5 m up in dense scrub. Clutch 2-4 eggs, glossy creamy white with tinge of lilac and streaked and mottled red-brown, dull maroon or pale inky purple with underlying grey-lilac markings, average c. 26 × 22 mm; incubation probably by both sexes, period at least 15 days; nestling period not known.

**Movements.** Sedentary.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Generally scarce to locally common. Rare and very local in Bangladesh, but common at Khulna. Probably locally not uncommon in Myanmar. Uncommon to locally common in Thailand, where Krabi may be best site. In Peninsular Malaysia confined to the few remaining pockets of mangroves on W coast, including in Kuala Selangor National Park, and a couple of sites on E coast (in Pahang and Johor). Occurs at Changi Beach, Pulau Ubin, in Singapore. Locally fairly common in Sumatra, and common at R Metas and R Rawa in 1996. This species' restriction to coastal mangroves suggests that its total population is likely to be small. In addition, this habitat has suffered severely in recent decades and is diminishing at an alarming rate, mainly through clearance for charcoal production and fuelwood, and being replaced by fish and shrimp ponds. This pitta could become threatened in near future. Single old record from Borneo, a specimen purportedly collected in Sarawak in 1891; lack of subsequent records has led to doubts regarding the origins of this specimen.

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## 27. Elegant Pitta

### *Pitta elegans*

**French:** Brève élégante

**German:** Schmuckpitta

**Spanish:** Pita Elegante

**Other common names:** Two-striped Pitta (*vigorsii*)

**Taxonomy.** *Pitta elegans* Temminck, 1836, Timor.

Often considered conspecific with *P. brachyura* or *P. moluccensis*. Has also been treated as a subspecies group of *P. versicolor*, but possibly best regarded as forming a superspecies with that together with *P. anerythra* and *P. iris*. Race *vigorsii* sometimes given full species rank because of its mosaic distribution, but such treatment seems unwarranted. Described forms *kalaonensis* (Kalao, S of Sulawesi) and *plesseni* (Kalaotoa) considered indistinguishable from *virginalis*, while *hutzi* (S Nusa Penida I, in Lombok Strait) and *everetti* (Alor) appear inseparable from *concinna*. Five subspecies recognized.

**Subspecies and Distribution.**

*P. e. concinna* Gould, 1857 - Lesser Sundas, on Nusa Penida, Lombok, Sumbawa, Flores, Adonara, Lomblen and Alor.

*P. e. maria* Hartert, 1896 - Sumba.

*P. e. virginalis* Hartert, 1896 - islands of Tanahjampea, Kalao and Kalaotoa (S of Sulawesi).

*P. e. elegans* Temminck, 1836 - breeds C Lesser Sundas (Sema, Timor, Kisar, possibly Roti); also recorded (probably only as non-breeding visitor) on islands of Ruang and Tabulandang (N of Sulawesi), Ternate (W of Halmahera), Banggai Is, Sula Is (Taliabu, Mangole, Sanana) and C Moluccas (Buru, Boano, Seram).



*P. e. vigorsii* Gould, 1838 - S Moluccas (Banda, Kasiui, Kur, Tiur), Kai Is (including Taam, Tayandu) and E Lesser Sundas (Damar, Babar); also recorded, probably as migrant, on Seram and Tanimbar Is.



blue feathers in wing, lower belly pinkish, orange tip of bill. Races differ mainly in head pattern: *virginalis* resembles nominate, but broader lateral crownstripe pale rufous, throat more extensively white; *vigorsii* has crownstripe paler behind eye, both chin and throat white, underparts slightly darker; *concinna* has reddish-buff lateral crownstripe gradually becoming white and then pale blue behind eye, more black on belly; *maria* has lateral crownstripe paler than previous, more red and little black on belly, less white in wing. VOICE. On Sumba "ka-wha-kil" or "hwp-hwp-pw", also single descending "pwer"; on Lombok "kphwrrr-whip" c. 1 second long and repeated at variable intervals; on Timor "kuw-whaa-whaa", repeated every 3-6 seconds; in Banggai Is. "perriew-priew"; in Sula Is described as "kwuwik-kwk", but on Kai Is more as "wrrek-wrrek" or "wrrek-wrrek-wrrek"; on Flores, however, more disyllabic "kwwee-kwill", repeated every 3 seconds.

**Habitat.** Variety of forest types, both dry and wet, including humid primary forest, dry monsoon forest, edges, heavily degraded forest, also logged and selectively logged monsoon forest and scrub, as well as areas dominated by cultivation. Also in swamp-forest on Timor. Lowlands to 1200 m, to 1400 m on Sumbawa and Flores; occasional records at higher altitudes presumably refer to migrants.

**Food and Feeding.** Stomachs have been found to contain small beetles, lepidopterans and snails. On Sumbawa, seen foraging in association with Emerald Doves (*Chalcophaps indica*). In Banggai Is. seen jumping up to catch flying insects.

**Breeding.** Main season apparently Apr-Aug, but probably throughout year. Single nest described, from Babar, built of broadleaves and leaf skeletons held together by a few large sticks, and lined with fine black rootlets. Clutch 2-3 eggs, glossy white with brown-lilac spots and patches and underlying pale grey-lilac spots, average c. 27 × 21 mm; no information on incubation and fledging periods.

**Movements.** Poorly known. Resident on some islands, e.g. Flores and Sumba. Nominant race appears to undertake some seasonal inter-island movements, moving N after breeding, possibly owing to food shortage. Race *vigorsii* also appears to make some movements, but details little understood. Jan record of this race on Kaledupa, in Tukanbesi Is (SE of Sulawesi), considered of doubtful provenance, possibly the result of escape of a captive individual; present in Tanimbar Is during period of highest rainfall, Dec-Feb, but apparently absent during driest months, Jun-Oct, although it is suggested that this may be merely that birds do not call during this period and so are not detected.

**Status and Conservation.** Not globally threatened. Widespread and not uncommon, though inter-island movements make it difficult to provide accurate assessments in some cases. On many islands, such as Lombok, Sumbawa and Flores, it is reported as common, and population of Sumba was estimated at 11,000 birds in 1994. Common on Banda during Sept-Oct, on Damar in Nov-Dec, and in Tanimbar Is in Dec-Feb; moderately common on Timor in Dec-Jan; on Taliabu, however, found to be rare and possibly near-threatened, with only five birds located during survey of Sept-Oct 1991. Appears to be at least partly adaptable to disturbed habitats. No reports from cagebird trade. Has been bred in captivity.

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## 28. Noisy Pitta

### *Pitta versicolor*

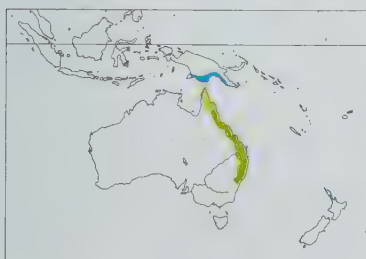
**French:** Brève versicolore      **German:** Lärmpitta      **Spanish:** Pita Bulliciosa  
**Other common names:** Buff-breasted/Blue-winged(ly) Lesser Pitta

**Taxonomy.** *Pitta versicolor* Swainson, 1825, "Australasia" = New South Wales, Australia. Formerly considered conspecific with *P. elegans* or with *P. iris*, but seems best regarded as forming a superspecies with those together with *P. anerythra*. Population from Cairns region of NE Queensland sometimes separated as race *intermedia* on basis of size and plumage characters, but variation in these parameters is clinal from N to S. Two subspecies recognized.

#### **Subspecies and Distribution.**

*P. v. similima* Gould, 1868 - islands in Torres Strait, and NE Queensland (from Cape York Peninsula S to Cairns District); some migrate to S New Guinea.

*P. v. versicolor* Swainson, 1825 - Cairns District S to E New South Wales (S to R Hunter region).



**Descriptive notes.** 19-21 cm; male 70-112 g, female 70-128 g. Adult has forecrown to nape chestnut with narrow black median stripe, rest of head, hindneck and throat black; upperparts green, rump shining turquoise-blue, tail black with green tip; lesser wing-coverts glossy turquoise, rest of coverts bright green; flight-feathers black, secondaries edged green, small white patch near base of primaries; underparts golden buff, green tinge on sides of breast, black belly patch, scarlet on lower belly and undertail-coverts; iris dark brown; bill black; feet flesh-pink to pale purplish-flesh. Sexes alike. Dusky stripes found on green and blue upperparts of 68% of

70 adults examined (both sexes). Juvenile is duller, throat whitish, no blue on wing, orange tip and base of bill. Race *similima* is smaller, brighter green above, deeper yellow-brown below. VOICE. Short low whistle, "hwhup-hu-whip" or "phwheat-ah-wheat" c. 1-1.5 seconds long, often likened to human phrase "walk to work" or "want a watch", usually repeated twice; single mournful whistle by female; sharp "keow", apparently as warning; also soft purring like that of a cat.

**Habitat.** Predominantly rainforest with luxuriant to sparse undergrowth, mostly in wet gulleys and river valleys; also dry sclerophyll forest and wet eucalyptus (*Eucalyptus*) forest. Also found in mangroves and coastal thickets outside breeding season, and in New Guinea found in monsoon woodland; migrants occasionally recorded in urban gardens. Sea-level to 1500 m.

**Food and Feeding.** Chiefly snails and insects (beetles, ants), also earthworms, spiders, woodlice (Isopoda); occasionally shrimps and crabs, also leeches, even small lizards. Some vegetable matter sometimes taken, e.g. fruits and berries, seeds. Stones or hard wood used as "anvils" to smash snail shells; small lizards bashed against logs before swallowing. Forages on ground, singly or in loose contact with partner. Hops about, turns over dead leaves and debris, and tosses them aside with bill; also scratches at soil and leaf litter.

**Breeding.** Laying recorded Oct-Apr (mostly Nov-Jan) in N and Jul-Feb (mostly Oct-Dec) in S. Domed nest c. 30 cm tall and 20-28 cm in diameter, with side entrance 8-11 cm across, built by both sexes from twigs, leaves, ferns, roots, moss, plant fibres and bark strips on a platform of twigs, lined with finer material, often with stick ramp 15-30 cm long leading to entrance; mammal dung or mud often spread over ramp and inside nest; usually on ground, sometimes up to 2.7 m up in tree niche or other vegetation. Clutch 3-5 eggs, average 2.9 in N but 3.6 in S, glossy white to blue-white with dark purple-brown blotches and spots and blue-grey underlying spots, mostly near large end, average c. 30 × 24 mm in N and c. 33 × 25 mm in S; incubation by both sexes, period 15-17 days; chicks fed by both sexes, fledging period c. 14 days; in captivity, chicks fledged after 15-20 days, independent after 32 days. Hatching success for 16 eggs in five clutches was 31%. Nests preyed upon by snakes, e.g. eastern tiger snake (*Notechis scutatus*).

**Movements.** Not well known. Partial migrant in N, where some make post-breeding migration N to S New Guinea in Feb-Apr, returning S in Oct-Dec. Probably more or less resident elsewhere, but some local movement; some altitudinal shifts and small-scale dispersal probably occur in most of range, mainly in S; possibly a degree of nomadism outside breeding season.

**Status and Conservation.** Not globally threatened. Moderately common to rather scarce; common at only a few sites, including Yarraman District SE (Queensland) and Georgica (New South Wales); rare in New Guinea. Density of 7-8 pairs in 6 ha of rainforest in New South Wales. Very silent outside breeding season, which may in part explain the comparatively few records of this species. Adversely affected by habitat loss associated with agricultural expansion, leading to declines and local extinctions in several parts of range. Formerly common at Nanango (SE Queensland), but natural subtropical rainforest now replaced by hoop pine (*Araucaria cunninghamii*) plantations and only small forest remnants of c. 32 ha survive; was last recorded there in 1976, and believed now to be extinct; probably extinct also on Redcliffe Peninsula. Decline noted also in NE New South Wales as a result of heavy disturbance and degradation of lowland rainforest. In addition, is often killed by cats, more rarely by dogs; sometimes killed on roads and through collisions with windows. No records from cagebird trade.

**Bibliography.** Alley (1979), Barker & Vestjens (1990), Beehler & Finch (1985), Beehler *et al.* (1986), Bell (1968), Berulidsen (1980), Berulidsen & Uhlenhuth (1995), Blakers *et al.* (1984), Braithwaite (1972), Cayley (1964), Chan (2001), Christidis & Boles (1994), Coates (1990), Coates & Peckover (2001), Dawson *et al.* (1991), Draffan *et al.* (1983), Eastwood & Gregory (1995), Finch (1980b, 1981), Fisher (1975), Friith (1999), Friith & Friith (1991, 1992), Fulton & Boles (2002), Hall (1974, 1999), Higgins *et al.* (2001), Hoberoff (1992), Kikkawa (1970), King & King (1974), Kirkup (1995), Laurance & Grant (1994), Lavery (1986), Lavery *et al.* (1968), Lea & Gray (1935), Lindsey (1992), Macdonald (1988), McAllan & Bruce (1989), Mees (1982), Morcombe (2000), Nagel (1986), Nilsson (1990), Norris (1964), Parrish (1983), Pizzey & Knight (1997), Rand & Gilliard (1967), Redhead (1988, 1990), Rose (1999), Schodde & Mason (1999), Schodde & Tidemann (1986), Simpson & Day (1998), Snedie (2002), Stattersfield & Capper (2000), Steward (1984), Storr (1984), Sutton (1990), Taylor & Taylor (1995), Templeton (1992), Threlfo (1983), Totterman (1999), Trounson & Trounson (1987), Trudgeon (1971), Warren & Barwell (1987), Wieneke (1988), Woodall (1993, 1994, 1997), Zimmermann (1996, 1997).

## 29. Black-faced Pitta

### *Pitta anerythra*

**French:** Brève masquée      **German:** Schwarzgesichtpitta      **Spanish:** Pita Carinegra  
**Other common names:** Masked/Solomons Pitta

**Taxonomy.** *Pitta anerythra* Rothschild, 1901, Santa Isabel, Solomon Islands.

Possibly forms a superspecies with *P. elegans*, *P. versicolor* and *P. iris*. Three subspecies recognized.

#### **Subspecies and Distribution.**

*P. a. pallida* Rothschild, 1904 - Bougainville (N Solomons).

*P. a. nigrifrons* Mayr, 1935 - Choiseul (C Solomons).

*P. a. anerythra* Rothschild, 1901 - Santa Isabel (C Solomons).



**Descriptive notes.** 15-17 cm. Adult has crown rich chestnut, rest of head black, tinged buff on nape; hindneck and upper mantle black, rest of upperparts bright green, rump feathers tipped blue-green, tail dull green with black base; lesser upperwing-coverts mostly glistening turquoise, rest of coverts green; flight-feathers black, secondaries edged green, small white patch on primaries; underparts ochre-buff, darkest on breast; iris dark brown; bill blackish; feet pale greyish to bluish-slate. Sexes alike. Dusky stripes found on green upperparts of 8% of 36 adults examined (both sexes, all races). Juvenile not described. Race

*nigrifrons* has more black on forecrown, underparts deep ochre but variable; *pallida* is larger, has head black with little or no chestnut on nape, and is much paler, almost whitish, below. VOICE. On Santa Isabel, harsh and rather unmelodic far-carrying "hww-hwe(-)hww" or "hwe(-)hww", rising sharply at end.

**Habitat.** Primary and secondary forest, also scrub and small forest fragments mixed with old gardens. In the past was known to occur in coastal plains and alluvial valleys, and in forested mountain valleys. Lowlands to 600 m.

**Food and Feeding.** Feeds on worms, snails and insects.

**Breeding.** An egg collected in mid-May and female in breeding condition in late Jul on Bougainville; males in post-breeding moult in Jul on Santa Isabel. Bulky nest constructed of leaves and moss,



placed on or near ground. Clutch size unknown; egg collected on Bougainville (*pallida*) was creamy white, spotted with brownish-red and underlying greyish-mauve, size 30.8 × 25 mm. No other information.

**Movements.** Probably resident.

**Status and Conservation.** VULNERABLE. Restricted-range species: present in Solomon Group EBA. Very small range, and global population probably very small. No recent records from Bougainville, where not uncommon in early decades of 20th century. Not found on Choiseul in recent searches by ornithologists. In 1994 found to be common in SE Santa Isabel at Tirotonga, where up to three individuals calling simultaneously. Unconfirmed reports from two islands adjacent to Choiseul (Kolombangara, Vangunu), but species thought unlikely to breed there. May have declined steeply in most of range, but lack of access to Bougainville hinders assessment of species' current status; the possibility that it has an extremely patchy distribution or that it was always relatively rare in most of range cannot be excluded. Recently suggested that this weak-flying species' inability to colonize other areas by flying over water renders it liable to extinction. Otherwise, forests in alluvial valleys, which once represented an apparently important habitat for the species, are threatened by extensive logging and have almost disappeared in many places. On other hand, it appears not to be subject to serious predation by introduced mammals; on Santa Isabel found near settlements with cats, dogs and rats (*Rattus*). Conservation initiatives include further fieldwork to establish this pitta's current distribution and numbers, and to determine its ecological requirements; setting-up of an ecotourism facility at Tirotonga; and a programme aimed at raising public awareness, first on Santa Isabel. No reports from cagebird trade.

**Bibliography.** Anon. (1991), Buckingham *et al.* (1995), Coates (1990), Collar & Andrew (1988), Collar *et al.* (1994), Diamond (1987), Doughty *et al.* (1999), Dutton (2000, 2001), Gibbs (1996), Gregory (2000), Hadden (1981), Kratter, Steadman, Smith & Filardi (2001), Kratter, Steadman, Smith, Filardi & Webb (2001), Mayr (1935, 1936, 1945), Mayr & Diamond (2001), Rothschild & Hartert (1905), Stattersfield & Capper (2000).

### 30. Rainbow Pitta

#### *Pitta iris*

**French:** Brève iris

**German:** Regenbogenpitta

**Spanish:** Pita Arcoiris

**Other common names:** Black-breasted Pitta

**Taxonomy.** *Pitta iris* Gould, 1842, Cobourg Peninsula, Northern Territory, Australia.

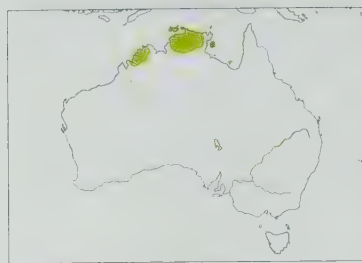
Sometimes considered conspecific with *P. versicolor*, but differs significantly in plumage, biometrics and voice; probably better treated as forming a superspecies with that species together with *P. elegans* and *P. anerythra*. Two subspecies recognized.

**Distribution and Subspecies.**

*P. i. johnstoneiana* Schodde & Mason, 1999 - NW Australia in NW Kimberley Division (Napier Broome Bay S to R Prince Regent), including Augustus I and islands in Admiralty Gulf.

*P. i. iris* Gould, 1842 - N Northern Territory, from Melville I and Darwin E to Groote Eylandt, including Tiwi Is.

**Descriptive notes.** 16-18 cm; 55-72 g. Adult has head and neck black with broad chestnut lateral crownstripe, upperparts bright olive-green, sometimes a narrow silvery green-blue band across uppertail-coverts, tail green with black base; large shining violaceous-blue patch on lesser coverts, rest of upperwing-coverts green with golden gloss; flight-feathers blackish, secondaries edged green, primaries tipped paler and with small white spot near base; all black below, except for some buff feathers on lower flanks, scarlet lower belly and undertail-coverts; iris dark brown; bill black; feet flesh-coloured to silvery grey or reddish-grey. Sexes alike. Dusky stripes found on green and blue upperparts of 60% of 23 adults examined (both sexes, both races). Juvenile is duller than adult, little or no chestnut on crown, little blue on wing, white-mottled throat, pale pinkish vent,



orange base of bill. Race *johnstoneiana* is slightly smaller, with larger rufous-brown stripe on side of crown, larger white wing spot. Voice. Double whistle, "teow-whit, teow-whit" or "choowip-choowip", often likened to human phrase "I want a whip", or sometimes first note omitted, often repeated in series during Oct-Dec; loud sharp "keow" as alarm; also soft cat-like purr, "brrr", given in display.

**Habitat.** Monsoon rainforest, gallery forest and vine scrub, also eucalypt (*Eucalyptus*) forest, and sometimes found in bamboo thickets and mangrove edges; occasionally recorded in pine (*Pinus*) plantations. Sea-level to 380 m.

**Food and Feeding.** Worms, snails, insects and their larvae, also other arthropods such as spiders, centipedes (Chilopoda), millipedes (Diplopoda); occasionally frogs, small skinks (Scincidae); rarely, fruit of *Carpentaria* palms. Insects mainly beetles, cockroaches (Blattodea), ants, orthopterans. Earthworms and snails form major part of diet during Oct-Apr wet season; insects eaten mostly during dry season. Snail shells smashed against branch or exposed roots; large prey seized with bill and shaken, dropped, then picked up and shaken again, process repeated several times. Forages on ground, making a number of hops and then pausing to inspect leaf litter; scratches soil or litter with foot, tosses aside leaves with bill.

**Breeding.** Dec-Apr, occasionally later, in W, and mainly Oct-Mar in Northern Territory; often two broods raised in a season. Maintains territory of over 10,000 m<sup>2</sup>. Usually domed nest c. 22 cm tall and c. 26 cm in diameter, with side entrance c. 9.5 cm across, built by both sexes from sticks, bark strips, dead vines, leaves, grass, sometimes almost entirely from bamboo leaves, and lined with finer material; base of entrance sometimes covered with faecal pellets of mammalian herbivores; placed up to 8.5 m (mean 4.5 m) above ground in tree or palm, often on top of stump, less often on ground against buttress roots. Clutch 3-4 eggs, rarely 5, glossy creamy white with dark brown or red-brown rounded spots and underlying grey-lilac spots, average c. 26 × 21 mm; incubation by both sexes, period 14 days; both also take equal share in feeding chicks, in 92 feeds at eight nests food delivered at average interval of 7.5 minutes; young leave nest after 13-15 days, independent c. 2 weeks later. Success sometimes low; of 66 nests over several years at one site, 74.2 % lost through predation. Recorded longevity in wild at least 9 years.

**Movements.** Sedentary.

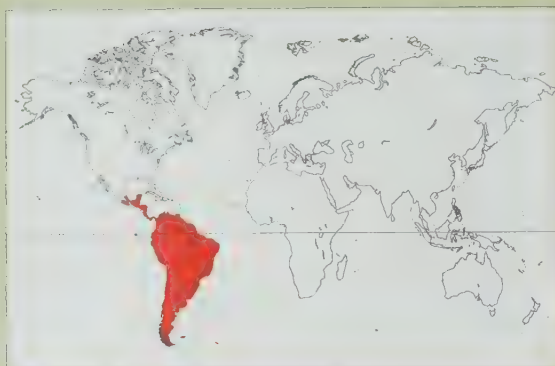
**Status and Conservation.** Not globally threatened. Restricted-range species: present in North-west Australia EBA. Locally common. Nominat race common around Darwin; in Northern Territory, density of 1 bird/ha recorded in Kakadu National Park; mean of 0.4 birds/ha at various sites in Top End, where species recorded in 33 of 48 monsoon rainforests visited; and 7 individuals calling in c. 4 ha on Cobourg Peninsula. Deterioration of monsoon forest and edge caused by fires could possibly have adverse effect on its numbers, although detailed studies did not find this to be so. W population (*johnstoneiana*) less well known; formerly somewhat more widespread; on Mitchell Plateau (Kimberley), vegetation partially destroyed by feral cattle (*Bos*), resulting in greatly reduced area of feeding habitat and marked decline in numbers of this subspecies. Not reported in cagebird trade.

**Bibliography.** Barker & Vestjens (1990), Beruldsen (1980), Blakers *et al.* (1984), Cayley (1964), Christidis & Bales (1994), Crawford (1972), Ford (1978), Friith & Hitchcock (1974), Glover (1968), Hall (1974), Higgins *et al.* (2001), Johnstone & Burbidge (1991), Le Souët (1901), Lindsey (1992), Macdonald (1988), Meyer de Schauensee (1957), Morcombe (2000), Pizzey & Knight (1997), Rose (1999), Schodde & Mason (1999), Schodde & Tidemann (1986), Simpson & Day (1998), Stattersfield & Capper (2000), Storr (1977, 1980), Trounson & Trounson (1987), Woinarski (1993), Woinarski *et al.* (1989), Zimmermann (1996, 1997).





Class AVES  
Order PASSERIFORMES  
Suborder FURNARIII  
**Family FURNARIIDAE (OVENBIRDS)**



- Small to medium-sized birds, most with short, rounded wings, often strong legs and feet, often long tail with minor to major strengthening of feather shafts; plumage mostly some shade of brown, ranging from greyish or blackish to olivaceous or reddish.
- 10-26 cm.



- Neotropical Region.
- All habitats.
- 56 genera, 236 species, 588 taxa.
- 26 species threatened; none extinct since 1600.

### Systematics

Regarding the family as a whole, Furnariidae can be characterized by extremes. At one end, it exhibits exceptional to unparalleled heterogeneity and diversity in nest architecture, structural morphology, foraging behaviour, habitat occupancy and physiological tolerance. At the opposite end, it displays remarkable homogeneity in coloration, social systems, diet and vocalizations.

The ovenbirds (Furnariidae) have been recognized as a natural group by ornithologists for at least 150 years. The only serious controversy has concerned whether the woodcreepers (Dendrocolaptidae) are nested within the ovenbirds or should be ranked as the sister taxon to them, either at family or subfamily level. Although the argument is still largely unresolved, these two groups of birds have for more than a century been considered more closely related to each other than either is to any other lineage in the class Aves. This is due in part to the fact that they share a unique character of the syrinx, namely the presence of two intrinsic muscles, a character noted by earlier avian anatomists in the nineteenth century. Support for the hypothesis of a close relationship between the two has come more recently from genetic data, the result of studies of both DNA-DNA hybridization and DNA-sequencing.

The name Furnariidae comes, as is to be expected, from the family's type genus, *Furnarius*, which in Latin means "baker" or "one who keeps an oven". This genus name was introduced by Vieillot, basing himself on Buffon's "Fournillier", and presumably alludes to the ovenlike shape of the adobe mud nest of the Rufous Hornero (*Furnarius rufus*), likewise found in at least three of its congeners. Although this nest type is, in fact, very unusual within Furnariidae as a whole, the family name does at least draw particular attention to nest shape, which is highly appropriate for a family known for its distinctive and often absurdly large nests.

As with many Neotropical Passeriformes, the fossil record for the family is extremely weak: only four fossil species attributed to the Furnariidae are known, most from single specimens, and all from the Pleistocene. Two species are assignable to modern genera, *Cinclodes* and *Pseudoseisura*, whereas the other two belong to the fossil genus *Pseudoseisuropsis*.

Thus, the fossil record so far provides no help in determining the origins, history, biogeography and relationships of the family. Nevertheless, if traditional, conventional biogeographical interpretations have any predictive value, the ovenbirds are certainly of South American origin. Perhaps no other avian family is so

closely associated with a continent as is Furnariidae with South America. Of the 236 taxa currently ranked as species, 210, or 89%, are endemic to South America and its continental islands. All but two of the remaining 26 species occur in Middle America, the exceptions being a single species in the Falkland Islands, in the South Atlantic, and one in the Juan Fernández Islands, off Chile, in the Pacific Ocean. Furthermore, as 20 of the 24 furnariids found in Middle America occur also in South America, only four of the family's 236 species, less than 2%, are restricted to Middle America. These are the Rufous-breasted Spinetail (*Synallaxis*



*The Necklaced Spinetail* presents a quandary to taxonomists. Currently included within the genus *Synallaxis*, it differs in plumage and vocalizations from, and is more arboreal in habits than, its undergrowth-skulking congeners. Species limits aside, there is very little serious debate about the wider taxonomy of the ovenbirds in general. The one exception concerns the treatment of the woodcreepers (Dendrocolaptidae) in relation to the ovenbirds. Although structural morphology and genetic research indicate that maintaining them as a monophyletic group is probably correct, recent genetic data indicate that they may be a lineage within, rather than the sister-group to, the ovenbirds.

[*Synallaxis stictothorax maculata*, Lambayeque, Peru.  
Photo: J. Dunning/VIREO]



The largely terrestrial **Rufous-banded Miner** and its relatives in the genus *Geositta* are separated from the other ovenbirds by a key difference in syrinx structure and the presence of a notched tail. Miners differ further in being strongly associated with open habitats. This association accounts for many of the other differences that are apparent, such as aerial song-flights, strong flight, and striking wing and tail patterns. The name "miner" presumably refers to the fact that they excavate nest-burrows or appropriate those dug by other birds and mammals.

[*Geositta rufipennis giai*,  
Perito Moreno  
National Park,  
Argentina.

Photo: José & Adriana Calo]



*erythrothorax*), the Ruddy Treerunner (*Margarornis rubiginosus*), the Beautiful Treerunner (*Margarornis bellulus*), which lives in mountains within sight of Colombia, and the Streak-breasted Treehunter (*Thripadectes rufobrunneus*). In addition, most of the Middle American furnariids reach no farther north than Costa Rica, and only six extend as far as southern Mexico; none occurs in the West Indies. In comparison with the many other bird families of the Neotropics, therefore, the truncation of the northern limits of the Furnariidae is exceptionally severe.

From the above details, therefore, it is evident that the ovenbirds represent a truly South American radiation. In contrast

The cocked tail and rocky habitat of the **Straight-billed Earthcreeper** are typical of the genus *Upucerthia*. Earthcreepers favour rocky ravines with shrubs, clumps of grass and scree and boulders for shelter. Other features of this terrestrial genus include plain, rather uniform plumage (although some species exhibit striking wing markings), a long and often decurved bill, and the fact that, like the miners (*Geositta*), its members nest in burrows. Earthcreepers are found mainly in the high-altitude habitats of the Andes, although some occur at lower elevations and one at sea-level. Many consider the curve-billed members of this genus as demonstrating convergent evolution with the thrashers (*Toxostoma*) of North America.

[*Upucerthia ruficaudus montanus*,  
Abra Pampa, Jujuy,  
Argentina.

Photo: Andy & Gill Swash]



to most other Neotropical lineages, Furnariidae is one of the predominant bird families at the southern end of the continent, in the cold higher latitudes of South America. Whereas the typical antbirds (*Thamnophilidae*), the ground-antbirds (*Formicariidae*), the manakins (*Pipridae*), the cotingas (*Cotingidae*), the motmots (*Momotidae*), the puffbirds (*Bucconidae*), the jacamars (*Galbulidae*) and the toucans (*Ramphastidae*), as well as the American representatives of the trogon family (*Trogonidae*) and the barbet family (*Capitonidae*), barely make it farther south than the subtropics of northern Argentina, the ovenbirds are prominent members of the avifauna all the way south to the coldest and bleakest parts of Tierra del Fuego. Although the tapaculos (*Rhinocryptidae*) extend as far south as the furnariids, they are not represented in the Guianan Shield or the Patagonian steppe regions, nor are they so numerous in terms of number of species. This same pattern of familial truncation is mirrored by elevational patterns of distribution in the Andes, where many of the core Neotropical families drop out precipitously with increasing altitude, and few ascend beyond the timber-line ecotone. Of the major Neotropical families, only the tinamous (*Tinamidae*), the hummingbirds (*Trochilidae*) and the tyrant-flycatchers (*Tyrannidae*) have members living in the *puna* zone. Hummingbirds and tyrant-flycatchers, in contrast to the Furnariidae, are well represented in northern Central America, with several endemic genera and many endemic species, and both are reasonably well represented in the Nearctic Region. This leaves the much less species-rich tinamous as the only competitor for the title of "most South American" bird family. The inclusion of the woodcreepers in the Furnariidae would do little to alter this pattern, except that the woodcreepers are proportionally better represented in Central America and extend farther north in Mexico.

The biogeography of the furnariid species currently placed in monotypic genera may also provide hints as to the history and, perhaps, the geographical origins of the family. The assignment of any species to a monotypic genus is to some degree, of course, arbitrary, and is also dependent on whether discrete geographical variation within the lineage is considered to represent differentiation at the species level or at the subspecies level; however, it is at least somewhat indicative of morphological distinctiveness within the family. With that important caveat in mind, it is still of some interest that two particular, region-restricted habitats each hold four monotypic genera of furnariids. One is the Atlantic Forest region of south-eastern South America, to which the Itatiaia Spinetail (*Oreophylax moreirae*), the Canebrake Groundcreeper (*Clibanornis dendrocolaptoides*), the Pale-browed Treehunter





Placed in a monotypic genus closely related to the other earthcreepers (Upucerthia), the well-marked **Band-tailed Earthcreeper** inhabits shrubby plains, where it is largely terrestrial. One factor distinguishing this species from the Upucerthia earthcreepers is that it constructs large twig nests in low bushes, these bearing a resemblance to the nests built by canasteros (Asthenes). Currently, the taxonomic relationship between Upucerthia and Eremobius is uncertain.

[*Eremobius phoenicurus*, Argentina.  
Photo: Roland Seitre/Bios]

(*Cichlocolaptes leucophrys*) and the Sharp-billed Treehunter (*Heliobletus contaminatus*) are confined. The other is the emergent vegetation of marshes of subtropical southern South America, where the Curve-billed Reedhaunter (*Limnornis curvirostris*), the Straight-billed Reedhaunter (*Limnornis rectirostris*), the Bay-capped Wren-spinetail (*Spartonoica maluroides*) and the Wren-like Rushbird (*Phleocryptes melanops*) are found. The last of those also extends into the Andes. In the humid forests of the Andes there are three further species each placed in a genus of its own: the White-browed Spinetail (*Hellmayrea gularis*), the Spec-

tacted Prickletail (*Siptornis striatocollis*) and the Rusty-winged Barbtail (*Premnornis guttuligera*). Similarly, Amazonia contains three such species, the Orange-fronted Plushcrown (*Metopothrix aurantiaca*), the Point-tailed Palmcreeper (*Berlepschia rikeri*) and the Chestnut-winged Hookbill (*Ancistrops strigilatus*).

A further three regional habitat types harbour each at least two single-species genera. The arid *caatinga* region of extreme east Brazil is the home of the Red-shouldered Spinetail (*Gyalophylax hellmayri*) and the Great Xenops (*Megaxenops parnaguai*), the southern beech forests of temperate southern South America harbour Des Murs's Wiretail (*Sylviorthorhynchus desmursii*) and the White-throated Treerunner (*Pygarrhichas albogularis*), while the savannas and scrub of southern South America contain the Lark-like Brushrunner (*Coryphistera alaudina*) and the Firewood-gatherer (*Anumbius annumbi*).

Taken as a whole, the monotypic genera of furnariids have a distribution restricted to South America. More importantly, however, this is concentrated in the eastern and southern portions of the continent, rather than the northern and western sections. Those first two areas are also among the oldest parts of the continent in terms of surface geology and, presumably, habitat types.

With regard to general plumage, voice and behaviour, the woodcreepers cannot be readily distinguished from the ovenbirds. Although the scansorial, or branch-climbing, behaviour and concomitant morphological adaptations have led to the recognition of Dendrocolaptidae as a family separate from Furnariidae, the basis for this is weak. The only character that unambiguously diagnoses the Dendrocolaptidae as a monophyletic group is its pattern of body pterylosis, involving a configuration in the ventral feather tract found in no other passeriform family. This was outlined in a study by M. Clench, but a limited number of taxa were included in her sample, so further work is needed before this single character becomes codified as defining the woodcreepers.

Otherwise, the climbing behaviour and adaptations of the woodcreepers are not much greater than those of the genera *Pygarrhichas*, *Margarornis* or *Berlepschia* within the present family. All woodcreepers have a tail in which the shafts are stiffened throughout and also terminate in slightly to strongly decurved, protruding spines. While no ovenbird possesses an identical tail, some species, particularly the White-throated Treerunner, come so close to this condition that the use of this character as a



The boldly marked and terrestrial **Crag Chilia** favours sparsely vegetated, arid rocky slopes and cliffs. It hunts for prey over the rock surfaces, cracks and fissures, and builds a twig nest hidden in a rock crevice. This is a restricted-range species found only in a relatively small area of Chile. It occupies a monotypic genus having affinities with the earthcreepers (Upucerthia) and, possibly, also the genus Cinclodes. The ovenbird family is notable for including a high proportion of species that, like the Crag Chilia, are dependent on rocky habitats for feeding and the provision of nest-sites.

[*Chilia melanura melanura*, Farellones, Cordillera de los Andes de Santiago, Región Metropolitana, Chile.  
Photo: Gonzalo González C./ Science Adventure]



Like most members of the genus *Cinclodes*, the sturdily built, thrush-like **Dark-bellied Cinclodes** is closely associated with water, frequenting riparian habitats, unexposed shorelines and lake margins. The scientific name of the genus reflects superficial similarities to the dippers (*Cinclus*). Resident in coastal Tierra del Fuego, the Dark-bellied Cinclodes, in common with many of its congeners, seems able to tolerate extremely severe climatic conditions. Perhaps a key to this tolerance of harsh habitats is the fact that this cinclodes, like many species in the Furnariidae, shelters the eggs and young by placing its nest at the end of a burrow excavated into the ground.

[*Cinclodes patagonicus patagonicus*,  
Tierra del Fuego  
National Park,  
Argentina.  
Photo: Andy & Gill Swash]



means of justifying either monophyly or family rank appears rather arbitrary. Although many sources state that no furnariids persistently use the tail as a brace during climbing, the *Margarornis* treerunners do this at least as much as do some woodcreepers, such as the *Dendrocincla* species, and many other furnariids use the tail occasionally as a brace against branches during certain foraging manoeuvres. In addition, the complex plumage patterns of many woodcreeper taxa are suspiciously close in many details to those of certain ovenbirds. Examples include *Glyphorhynchus*, which resembles *Xenops*, and *Xiphorhynchus*, which is closely approached in appearance by the furnariid genera *Premnornis*, *Cichlocolaptes* and *Hyloctistes*, while the Tawny-winged Woodcreeper (*Dendrocincla anabatina*) bears a remarkable resemblance to the *Anabacerthia* foliage-gleaners.

The Dendrocolaptidae have large horns on the processi vocales of the syrinx, but these are also found in the furnariid genus *Geositta*. They also all have holorhinal nares, rounded and with the posterior end anterior to the naso-frontal hinge, whereas the Furnariidae have nares that are narrow but rounded posteriorly (pseudoschizorhinal). A. Feduccia, however, has demonstrated that some furnariids tend towards the holorhinal condition, thus casting doubt on the validity of this character for separating the lineages. This tendency is most evident in the species in the philydorine assemblage (see below), which are closest to the woodcreepers in other aspects of morphology and plumage.

As pointed out by R. Ridgway, the two families differ in foot morphology. In the Dendrocolaptidae, the outer toe is almost as long as the middle toe and is much longer than the inner toe, while the hallux, or hind toe minus claw, is shorter than the inner toe; the outer and middle toes are fused basally. In the Furnariidae, the outer toe is shorter than the middle one, the hallux is not shorter than the inner toe, and the outer and middle toes are fused for only a short distance, if at all. Nevertheless, these characters, as well as others that reveal differences between the ovenbirds and the woodcreepers, such as limb proportions, the configuration of the distal end of the tarsometatarsus and the shape of the proximal end of the tibiotarsus, are merely reflections of adaptations for climbing. Indeed, those members of the Furnariidae, especially in the philydorine group, that do more climbing also exhibit variations that tend towards the characters of the woodcreepers or are indistinguishable from them.

Whether the woodcreepers are themselves monophyletic is the critical first step towards according them family rank (see page 358). The monophyly of the woodcreepers, however, is a separate issue from that of whether they should or should not be included in the Furnariidae. The fundamental question concerns whether some ovenbirds are more closely related to woodcreepers than they are to other furnariids, in other words, whether the Furnariidae are paraphyletic with respect to the Dendrocolaptidae. If that is the case, then the woodcreepers cannot be recognized as a separate family, or a separate group taxon of any rank, under

The **Wing-banded Hornero** has a distinctive short-tailed and long-billed appearance and a striking supercilium.

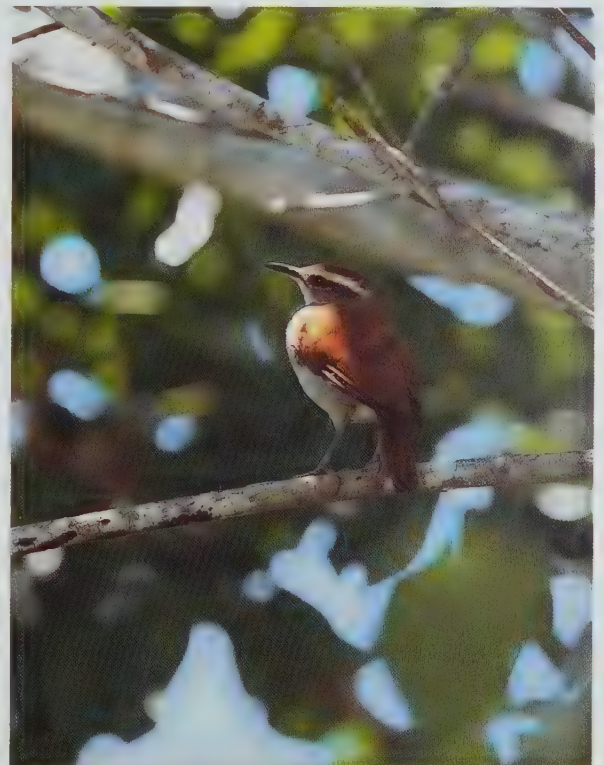
It feeds primarily on the ground, where it struts around in a characteristic way, probing the soil and flicking aside leaves and detritus while searching for food, behaviour typical of the genus *Furnarius*. Unlike the other five species, however, the Wing-banded Hornero does not build an oven-like mud nest.

It is these peculiar nests that have given the family as a whole its name.

Horneros are typically found in lightly wooded and open areas, often near water.

Some are conspicuous in gardens and near human habitation, and where this is the case they are often well-known and celebrated species.

[*Furnarius figulus figulus*,  
Linhares, Espírito Santo,  
Brazil.  
Photo: Edson Endrigo]







A chunky, marsh-dwelling ovenbird, the ordinarily skulking **Curve-billed Reedhaunter** is the sole member of its genus. Although the Straight-billed Reedhaunter (*Limnornis rectirostris*) is occasionally included within the same genus, the two differ in morphology, nest architecture and egg coloration. In terms of plumage and feeding behaviour, this species is remarkably similar to the Old World reed warblers (*Acrocephalus*), a further example of convergent evolution following the dynamic radiation of the Furnariidae. The Curve-billed Reedhaunter has a rather small geographical range, occurring in wet reedbeds in eastern Argentina, Uruguay and southern Brazil.

[*Limnornis curvirostris*, Pelotas, Rio Grande do Sul, Brazil. Photo: Kevin J. Zimmer]

the principles of phylogenetic classification. Only if the woodcreepers and the ovenbirds are each independent monophyletic lineages, with all woodcreepers more closely related to one another than to any furnariid and, likewise, all ovenbirds closer to one another than any is to any woodcreeper, can they be accorded separate, equivalent taxonomic ranks such as family status. It is hoped that ongoing studies of molecular phylogeny will shed further light on this complex issue.

Of further relevance is the matter of determining which families are closest to these two groups. Since anatomical studies made in the nineteenth century, the proposed closest relatives have come from within the suboscine families known collectively as the

tracheophones. All families in this lineage, which also includes Thamnophilidae, Formicariidae, Conopophagidae and Rhinocryptidae, share unique morphology of the syrinx, and its monophyly is supported by more recent information derived from studies centred on DNA-DNA hybridization and DNA sequences. Within that cluster of families, however, the relationships of the furnariids and the dendrocolaptids to the rest remain to be resolved. C. G. Sibley and J. E. Ahlquist interpreted their DNA-DNA hybridization data as indicating that the sister-group was a cluster of three families, Formicariidae, Conopophagidae and Rhinocryptidae, which they treated as forming a superfamily, Formicarioidea. Subsequent analyses of DNA-sequence data by



The small size and acrobatic abilities of the **Plain-mantled Tit-spinetail** allow it to search for food on these delicate, slender flower stems. This species, as others of the genus, is characterized by its graduated and pointed rectrices, often forming a double-pointed tail tip. Variation in tail structure is extreme throughout the ovenbird family, and this is reflected in many of the English and scientific names of the genera. Moreover, the specific name of this species alludes to a perceived convergence with the Old World long-tailed tits (*Aegithalos*). Most tit-spinetails frequent scrub and light woodland at high altitude.

[*Leptasthenura aegithaloides*, 15 km north-west of La Serena, IV Región, Chile. Photo: Gonzalo González C./ Science Adventure]



High along the timber-line in the Andes, the **White-chinned Thistletail** is normally hard to observe well and keeps to dense cover along the edges of montane woodland. The English name of "thistletail" refers to the extraordinary long, graduated and rather "decomposed" tail possessed by all eight members of the genus. These somewhat similar-looking species have allopatric distributions stretching down the Andes chain from Venezuela to Bolivia, and in the past some authors have suggested that they are all merely subspecies of one variable species.

[*Schizoeaca fuliginosa fumigata*,  
Los Nevados National Park,  
Cordillera Central,  
Colombia.  
Photo: Otto Pfister]



M. Irestedt and colleagues, however, failed to produce any strong corroboration for this relationship.

Within the Furnariidae, some taxonomists have recognized three or four subfamilies as proposed monophyletic lineages. In cases in which the woodcreepers and the ovenbirds were considered to be two subfamilies, these groupings have been treated as tribes. Following this system, in the current linear sequence, the six genera from *Geositta* through to *Furnarius* represent the subfamily Furnariinae, whereas *Limnornis* to *Xenerpestes* make up the Synallaxinae. The position of the recently described genus *Acrobatornis* is unclear. Otherwise, the remaining 24 genera, from *Premnornis* to the end of the current sequence, constitute the Philydorinae, although the *Sclerurus* leaf-tossers and the monotypic genus *Lochmias* have been regarded by some authors as forming a separate subfamily, the Sclerurinae. The characters that unite the genera within each subfamily or tribe have not, however, been adequately outlined or demonstrated, and several recent classifications, including those of Sibley and B. L. Monroe, in 1990, and the American Ornithologists' Union, in 1998, have abandoned this level of classification. Furthermore, neither recent DNA-sequence data nor a phylogenetic analysis of nest-structure characters provided any firm evidence that these tribes represent monophyletic lineages. Although several major lineages of furnariids almost certainly do exist, manifested as well-separated deep branches of the phylogeny, it would seem unwise to accord them taxonomic rank at present. This is because the limits of those lineages are as yet uncertain, and many genera, such as *Geositta*, *Lochmias*, *Pygarrhichas* and *Clibanornis*, appear problematic.

The linear sequence of genera traditionally adopted by the majority of authors differs only in minor ways from C. E. Hellmayr's 1925 sequence. Until a modern, comprehensive, family-wide phylogeny is published that provides explicit hypotheses concerning basal taxa and intergeneric relationships, there is little reason for changing the historical sequence, even though it may be difficult or impossible in many cases to discover an explicit rationale for that sequence. As with all early classifications of taxa within bird families, the species composition and boundaries of each genus and the relationships among genera were undoubtedly inferred largely from non-quantitative assessments of similarities and differences in external phenotypic characters, namely morphology, plumage pattern and nest architecture. How accurately those assessments reflect phylogeny is not yet

known for certain. It is likely that the final verdict will reveal a blend of largely successful predictions based on phenotype, with most failures readily explainable with the benefit of hindsight, but also with some total surprises. Equally likely is that the predictive value of these assessments of phenotype will decay as one reaches farther back into furnariid history and into the deeper branches in the phylogeny. For example, K. Zyskowski and R. O. Prum's recent analysis of nest architecture produced a phylogenetic hypothesis that was largely consistent with the generic limits and sister relationships among genera as predicted by historical classifications, but provided lower resolution on the deeper branching patterns.

Because the nest-building behaviour is an inherited character, and because nest architecture differs so strongly among birds, nest structure has often provided data used in avian systematics. In the Furnariidae, the exceptional variation among genera prompted one of the earliest attempts at its use in classification, by H. von Ihering in 1915, and that early tradition continued through C. Vaurie's monograph, culminating in Zyskowski and Prum's analysis, in 1999. This last work is the only one to rely strictly on nest structure and to employ modern methodology. As emphasized by its authors and by many others, phylogenetic hypotheses based on single sets of characters have natural limitations. Nevertheless, nest structure in the Furnariidae provides strong support for some traditional groupings in the family, while also presenting some new hypotheses. The degree to which Zyskowski and Prum's use of the Dendrocolaptidae as an outgroup affected their results, given the likelihood that the woodcreepers are embedded within the furnariid tree, is uncertain.

Zyskowski and Prum's results point to the existence of several major clades in the family. Details of the various types of nest on which these are based are discussed in greater depth later (see Breeding). The largest clade consists of those genera that build domed nests, rather than being cavity-nesters, but including *Lochmias*, *Aphrastura* and *Leptasthenura*, members of which place domed nests in tunnels or holes. Within that group, the following relationships were supported: (1) a sister relationship between *Schizoeaca* and *Oreophylax*, which share *Sphagnum* moss nests; (2) a clade of marsh-nesters, *Limnornis*, *Limnocitites* and *Phleocryptes*, all of which construct an "awning" over the nest entrance; (3) a clade consisting of the Plain Softtail (*Thripophaga fusciceps*), *Siptornis*, *Premnoplex*, *Margarornis*, and eleven species of *Cranioleuca*, all of which have pensile nests





Like many ovenbirds, the *Itatiaia Spinetail* possesses a disproportionately long, graduated tail. The rectrices of this species are also pointed and rather disarrayed. The tail length of many furnariids is unusual for birds that do not use the tail for display purposes. The *Itatiaia Spinetail* has a highly restricted range, being confined to the highest mountains of south-east Brazil, a biogeographically unique distribution shared with no other Brazilian endemic. It occupies a monotypic genus the exact position of which within the family is the subject of some debate. Some authors consider the species best included with the thistletails (*Schizoeaca*), but most retain it in a separate genus.

[*Oreophylax moreirae*, Itatiaia National Park, Rio de Janeiro, Brazil. Photo: Edson Endrigo]

made of pliable plant matter; (4) a large group of taxa that use sticks as the major component of the nest; (5) within the stick-users, a group composed of *Schoeniophylax*, *Synallaxis*, *Gyalophylax* and *Certhiaxis* spinetails, which share the use of "thatch" over the nest-chamber; (6) a group that includes the previous genera and the cachalotes (*Pseudoseisura*), all of which restrict nest lining to the nest-chamber floor; and (7) the sister relationship of the monotypic genera *Anumbius* and *Coryphistera*, the Firewood-gatherer and the Lark-like Brushrunner, which share elaborate adornment of the roof of the nest-chamber.

Within the cavity-nesters, the analysis supported a close relationship among the Striped Woodhaunter (*Hyloctistes subulatus*), some *Automolus* foliage-gleaners, the Black-billed Treehunter (*Thripadectes melanorhynchus*) and the *Sclerurus* leaflossers, all of which build nests from rootlets and other fibrous material. Another clade consists of the hole-nesters that build woven cups of plant material; this includes the *Geositta* miners, the *Upucerthia* earthcreepers, the cinclodes, the *Furnarius* horneros, and a series of taxa from the "opposite" end of traditional linear sequences, namely the *Philydor*, *Anabazenops* and *Hylocryptus* foliage-gleaners, at least one *Automolus* foliage-gleaner, the four xenops, and one *Thripadectes* species, the Black-billed Treehunter.

These groupings, of course, leave many relationships unresolved, with polytomies in the phylogeny. They are consistent with continued retention of the monotypic genera *Eremobius*, *Chilia*, *Sylviorthorhynchus*, *Lochmias* and *Pygarrhichas*, but they call into question the monophyly of one genus, *Asthenes*, that seems dubiously monophyletic for other reasons. In addition, these results cast doubt on the monophyly of other genera which have seldom been questioned before, namely *Craniolaema*, *Thripadectes* and *Automolus*. Without additional information, especially genetic data, it is not possible to determine whether these genera are not monophyletic, or whether they are monophyletic and the nest structure is more "plastic" than assumed. Likewise, whether the groupings themselves reflect phylogeny or are artifacts of the analysis remains to be learned.

Regardless of these uncertainties, the analysis undertaken by Zyskowski and Prum represents major progress towards an understanding of the evolution of nest construction in the family Furnariidae, and provides a model for subsequent analyses. It of-

fers insights into the pathways of the evolution of nest architecture. For example, the analysis by those scientists leads to the hypothesis that nesting in cavities is the "primitive condition" in the Furnariidae, and that subsequent "loss" of this character is always accompanied by a compensating replacement character in terms of providing a covered or enclosed nest. Their phylogenetic hypothesis suggests that this has happened at least twice in the family, independently in *Furnarius* and in a lineage that includes those ovenbirds with domed nests made of plant material.

Use of other phenotypic characters in constructing phylogenetic hypotheses for relationships among the Furnariidae has been comparatively sparse. D. W. Rudge and R. J. Raikow used characters of the hind-limb musculature to analyse relationships within a few genera. Vocal characters have much potential for producing insights at the level of generic limits, yet only a few analytical studies have been published, examples of which are given later in this section. Although archived voice recordings now exist for a high percentage of species, a framework for character analysis and interpretation, following the model of M. L. and P. R. Isler and B. M. Whitney for the *Thamnophilidae*, has yet to be established. Similarly, behavioural features, such as displays and postures, have the potential to yield insights into relationships, but the employment of these aspects is hindered by a near absence of data. Even so, characters such as the wing-flapping display of the genus *Cinclodes* and the strutting walk of *Furnarius*, each of which seems diagnostic for the respective genus, provide cause for optimism that behavioural data can further an understanding of the relationships among the members of the family. In addition, analyses of plumage characters, using modern scientific methods, should prove fruitful, despite the reputation of such parameters as being "old-fashioned". Although plumage characters undoubtedly played a major role in defining genera in the Furnariidae, the eclectic and non-quantitative way in which they have been used leaves much room for improvement and, perhaps, some surprises. Furthermore, an analysis using modern phylogenetic methods may produce insights into the deeper patterns and pathways of plumage evolution in the family.

The linear sequence in the Furnariidae traditionally begins with the eleven miners in the genus *Geositta*. As noted above, the syrinx of these species possesses large horns, unlike that of any other ovenbird genus, so far as is known, but similar to that of the *Dendrocolaptidae*. This character sets *Geositta* apart from



These striking **Chotoy Spinetails**, although similar to the *Synallaxis* spinetails, are considered to belong in a monotypic genus on the basis of striking differences in their vocalizations. This pair neatly demonstrates the nearly complete lack of sexual dichromatism found throughout the ovenbird family, although the males of some species have been noted to be subtly brighter than the females. Likewise, there is very little evidence of strong size dimorphism in the Furnariidae; where data sets exist, they suggest that males are just slightly bigger than females. This being so, it is tempting to speculate that the bird on the left may be the male of this pair. Generally, ovenbirds appear to live in pairs throughout the year, and perhaps many species pair for life. Bird species that exhibit little sexual dichromatism or dimorphism usually have equal roles during the breeding cycle and have adopted strict monogamy.

This is likely to be the case throughout the ovenbird family, although, for most species, the information has yet to be collected to confirm these suppositions. The Chotoy Spinetail is distinctive because its plumage includes a yellow throat patch. In most furnariids, brown is the basic overall plumage colour. The few exceptions include several species or genera that stray into black, white and grey colorations, but in general few taxa deviate from this rule, and the possession of spectral colours is even more unusual among the members of this family.

[*Schoeniophylax phryganophilus*  
*phryganophilus*,  
*Aquidauana*,  
Mato Grosso do Sul,  
Brazil.

Photo: Edson Endrigo]







Currently comprising 33 species, the Synallaxis spinetails form the largest genus within the ovenbird family. They are distributed throughout South America except the extreme south and the highest elevations. Up to four species may occur at some sites.

Although some members of the genus, such as the **Pale-breasted Spinetail**, are widespread, many have very restricted ranges. Two such species are **Spix's Spinetail** and the **Rufous-capped Spinetail**, both found within relatively small areas in south-east Brazil, Uruguay and north-east Argentina, where their distributions overlap.

Because of this tendency for restricted geographical ranges, one new species has been described since 1970 and undoubtedly others still await discovery. Plumage features characteristic of the genus, and well illustrated by Spix's Spinetail, include a long, graduated tail, and crown and shoulder patches of a matching colour, with a partially concealed throat patch occasionally present. Although the members of this genus tend to have similar plumages, and can be confusingly difficult to distinguish from one another, all frequently utter diagnostic contact calls and songs that are useful aids to field identification. Spinetails often sing from exposed perches, but spend the rest of the time skulking in pairs in dense vegetation close to the ground.

Most Synallaxis species, as typified by the Pale-breasted and Spix's Spinetails, are found in dense vegetation in open areas or along the borders of forested areas, but a few, including the Rufous-capped Spinetail, are confined to the thick undergrowth of humid forest.

[Top: *Synallaxis albens*, Taquaral, Mato Grosso, Brazil.

Centre: *Synallaxis spixi*, Campos do Jordão, São Paulo, Brazil.

Bottom: *Synallaxis ruficapilla*, São Paulo, Brazil.  
Photos: Edson Endrigo]



The rather drab, bicoloured **Yellow-chinned Spinetail**, widespread in eastern South America, is associated with wetland habitats. Active and conspicuous, it is often found feeding in the open along wetland margins or foraging on mats of floating vegetation. It is not known whether this species also takes prey items directly from the water. Its sole congener has a rather restricted range, occurring only in grassy and shrubby riparian habitat, especially on islands and oxbow lake margins, along the major rivers in the Amazon Basin. The two species occur alongside each other at some sites. The exaggerated thickness of the legs of many ovenbirds, noted by numerous field observers, is apparent in this species.

[*Certhiaxis cinnameus*  
*valencianus*,  
Hato Piñero, Venezuela.  
Photo: Robin Chittenden/  
FLPA]



other genera, which may indicate that it is, indeed, basal within the family. The miners are also the only members of the family with an emarginate, or notched, tail, and some miners have the most conspicuous tail patterns amongst the Furnariidae. All are short-tailed terrestrial birds of open habitats, with flight abilities much greater than those of most other ovenbirds. Many or perhaps all miners also have flight songs, in contrast to other genera. Apart from the *Cinclodes* species, the miners are the only members of the family that habitually forage on open ground and generally avoid vegetation. Their aerial songs, strong flight, and conspicuous wing and tail patterns are all symptomatic of their being essentially open-country birds. Although some other furnariids are found in relatively desolate habitats, those other species, in genera such as *Upucerthia* and *Asthenes*, prefer some cover, even if only sparse clumps of grass, cacti, bushes or rocks (see Habitat). The bills of *Geositta* miners vary from short and straight to long, thick and curved; this variation is presumably associated with increased digging and probing foraging manoeuvres by the longer, more curve-billed species, but informative data are lacking.

Following the miners, the nine earthcreepers in the genus *Upucerthia* share with *Geositta* similarities in nest-site, using tunnels excavated in banks, and nest structure, building simple platforms of grasses and other plant matter, as well in some plumage features, such as wingbands. The *Upucerthia* earthcreepers are sneaky, long-tailed terrestrial species of arid, often rocky scrub, where they often carry the tail in a cocked position. The two monotypic genera *Eremobius* and *Chilia*, because of their rather unusual nests, as well as their distinctive plumage features, do not fit neatly into the existing sequence. In fact, the domed stick nest of *Eremobius* is more like those of many canasteros (*Asthenes*), spinetails (*Synallaxis*) and thornbirds (*Phacellodomus*) than like those of the mostly tunnel-nesting *Upucerthia* that it resembles most closely in general morphology. The reason for its historical placement following *Upucerthia* is presumably its general similarity to the Bolivian (*Upucerthia harterti*) and Chaco Earthcreepers (*Upucerthia certhioides*), which in turn differ in several ways from others of that genus. Regardless of nest differences, some ornithologists suspect that *Upucerthia*, as currently defined, may be paraphyletic with respect to *Eremobius*;

they believe that some species in *Upucerthia* are possibly more closely related to *Eremobius* than they are to other *Upucerthia*, particularly if, as in the existing classification, the latter includes the taxa *harterti* and *certhioides*. These last two have at times been treated in a separate genus *Ochetorhynchus*, although this is not correct in terms of nomenclature, since the type species of that genus is *ruficaudus*.

The next major genus is *Cinclodes*, a group of 13 species widely distributed in the cold regions of southern South America. They are terrestrial foragers that are frequently associated with water-edge habitats. Many, and probably all, of them have distinctive wing-flapping displays during which they sing from a perch and slowly flap their wings, exposing contrastingly coloured wingbands. Vaguely resembling thrushes (*Turdidae*) in appearance, the cinclodes share with most of the previous genera the habit of excavating tunnels for their nests, which are usually simple cups or platforms of plant matter. They show a greater tendency also to use existing crevices and nooks for nest-sites. In terms of flight abilities, they are second only perhaps to the *Geositta* miners, and superior to them in their record of colonizing oceanic islands. All these genera share similar biogeography and habitat patterns: they are characteristic of some of the most hostile environments in South America, from frigid alpine slopes to bitterly cold, wind-swept barren lands, to rainless deserts.

Lending their name to the family as a whole are the six species of hornero, sometimes referred to as "ovenbird", in the genus *Furnarius*. The "adobe oven" nests of most horneros are remarkable structures. Their resemblance to the clay ovens that at one time were in widespread use in Latin America gives these species their scientific, English and Spanish names. Long-billed, short-tailed, high-stepping walkers that strut with the head held somewhat back and the chest thrust forward, they forage primarily on open ground or mud. The horneros occupy habitats lacking extensive dense vegetation; even when within forested regions, they are found at margins and edges with open ground. They are renowned for their raucous duets. One species, the Wing-banded Hornero (*Furnarius figulus*), does not construct an adobe-style oven nest, and is therefore likely to be the basal member of the genus, even though this is not reflected in traditional taxonomic sequences.





**Pallid Spinetails** are rather conspicuous, active and acrobatic residents of montane forest in south-east Brazil. Their agile foraging technique is a typical trait of the genus *Cranioleuca*.

These spinetails are well adapted for climbing along branches and up trunks. The stiffened tips of the feathers of the short, double-pointed tail are used as a prop to provide support when climbing vertical surfaces, an aid that is also available to and used by some other forest-dwelling genera of the *Furnariidae*.

The members of the genus as a whole are found in most forest types of the Neotropics, from the lowlands to the tree-line of the high mountains. Many species build large oval nests, mostly of moss, which hang conspicuously from drooping branches. *Cranioleuca spinetail* are often conspicuous components of the mixed-species bird flocks that sweep through Neotropical forests and so confuse and delight first-time visitors to the region.

The only one found outside forest or woodland is the **Sulphur-throated Spinetail**, which is, instead, a secretive marsh-dweller inhabiting reedbeds throughout a relatively small range in northern Argentina, Uruguay and southern Brazil. The most recently discovered member the genus, the *Bolivian Spinetail* (*Cranioleuca henricae*), was described as recently as 1997. It was immediately categorized as globally threatened, primarily because of the severe and continuing habitat degradation that was evident over its small range.

[Above: *Cranioleuca pallida*, Itatiaia National Park, Rio de Janeiro, Brazil. Photo: Edson Endrigo]



Below: *Cranioleuca sulphurifera*, Salado's Depression, Buenos Aires, Argentina. Photo: Yves Bilat]



The long-tailed, rather drab **Dusky-tailed Canastero** often sings from exposed perches, and this is one of the few times when it can be easily observed. Ordinarily, it is a shy, terrestrial species that skulks in the dense thickets of the Chilean matorral. The reclusive behaviour of the canasteros can make identification of the 22 recognized species a difficult challenge in the field, as it is difficult to see the distinguishing plumage characteristics. Canasteros are found in fairly open habitats with scrub, grass and rocky outcrops throughout Andean and southern South America. The vernacular name "canastero" means basket-maker, and refers to the interwoven stick nests that these birds build low in bushes, trees and rock outcrops.

[*Asthenes humicola humicola*, Copiapó, Atacama, Chile.  
Photo: Adolf de Sostoa & Xavier Ferrer]

The next group consists of four genera, each containing only one or two species, and none having any obvious close relatives. The marsh-nesting *Limnornis* and *Limnortites* have been combined by some authors in *Limnornis*, but it is not certain that they are sister taxa. The two differ strongly in tail structure, as well as in the materials used for nest-building, and in the colour of their eggs. The blue-green eggs of *Phleocryptes* are unusual among furnariids, but the nest architecture of this species is similar to that of the previous two genera, although its plumage suggests a possible relationship to the fourth genus, *Aphrastura*. The two species in *Aphrastura* provide an amazing example of long-distance over-ocean colonization either by the Thorn-tailed Rayadito (*Aphrastura spinicauda*), followed by subsequent divergence leading to the Masafuera Rayadito (*Aphrastura masafuerae*), or by an ancestor common to both (see also Movements). It is also worth mentioning here that the genus *Pygarrhichas* may belong next to *Aphrastura*, as suggested by superficial plumage similarities and biogeography, rather than near *Xenops* at the end of the sequence, where it has traditionally been placed. On the other hand, the monotypic genus *Sylviorthorhynchus* has usually also been placed near the above genera, but without any explicit rationale. It is considered better to move it to a position next to the *Schizoeaca* thistletails, on the hypothesis that a general similarity between the two in morphology, and their similar preferences for cool, moist habitat, may well reflect phylogenetic relationships.

*Leptasthenura* encompasses a group of ten long-tailed, active, highly arboreal, very acrobatic species with the smallest bills in the Furnariidae. These are the tit-spinetails, the general behaviour and morphology of which have suggested to many that they are convergent with the long-tailed tits of the Old World genus *Aegithalos*. Nest-sites and nest structure are more variable in this genus than in any other in the family (see Breeding). Further, the use of vocalizations in an attempt to determine relationships within the genus is hindered by the seemingly complex repertoire of these species. The tit-spinetails appear to have no obvious close relatives in the family. Their general size and shape have led to their regular placement near or next to the thistletail and spinetail genera that follow. It has been suggested that the monotypic genus *Spartonoica* might be related to *Leptasthenura* or *Asthenes*, although some authors have merged it with *Synallaxis*.

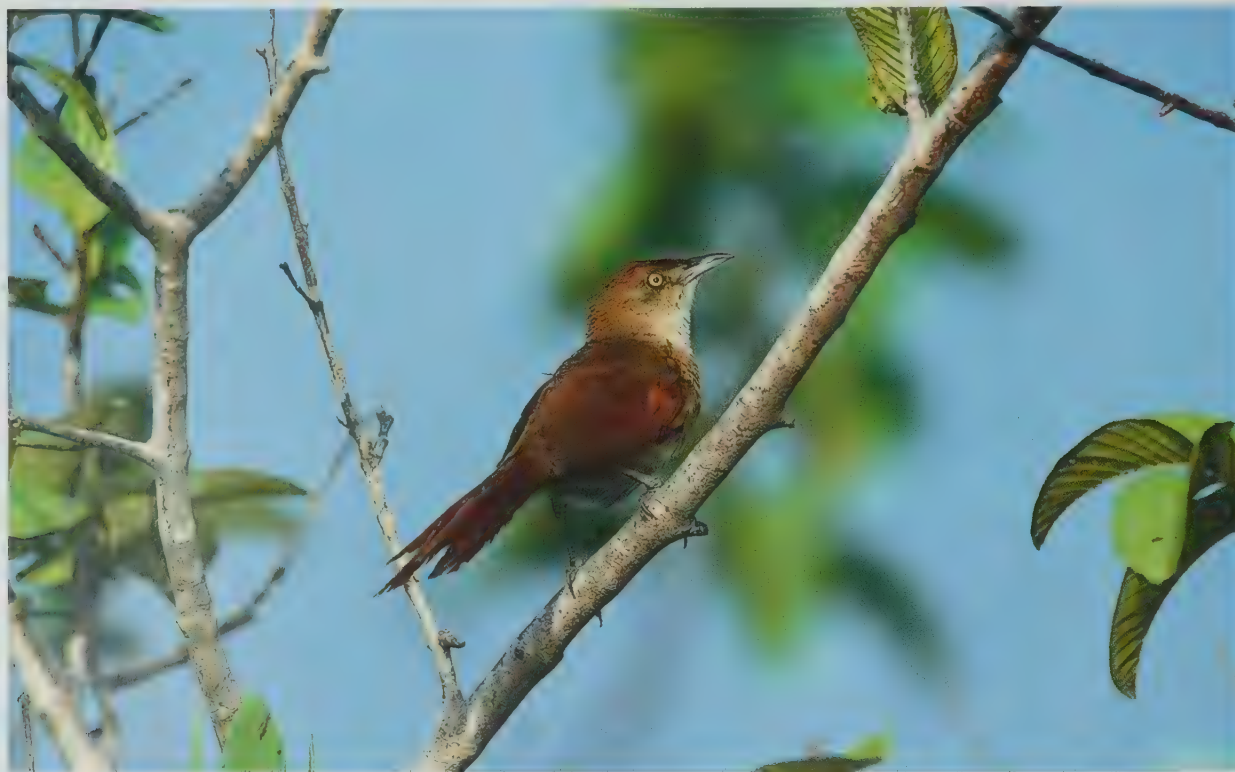
The eight species of *Schizoeaca* thistletails form a super-species, the distribution of which defines the humid timber-line ecotone of the Andes. The long, somewhat "disintegrated" tail accounts for the English name. All eight are sufficiently similar to one another that some authors have combined them in a single species. If any vocal differences do exist among them, they have not been adequately documented. The monotypic genus *Oreophylax* of montane south-east Brazil has been included in *Schizoeaca* by some taxonomists; in addition to morphological similarities, the nests and habitat of the two are similar. If this sister relationship is correct, then it is indeed remarkable biogeographically. Although the mountains of south-eastern Brazil share some avifaunal affinities with the Andes, these are generally restricted to genera that occur at low elevations in the Andes or even in the lowlands of southern South America. In contrast, *Schizoeaca* is confined to the higher elevations and seems an unlikely candidate for having a sister-taxon in south-east Brazil when so many other, more broadly distributed Andean bird genera have no representative there. Among the Furnariidae, for example, *Premnornis*, *Premnoplex*, *Margarornis*, *Pseudocolaptes* and *Thripadectes* are reasonably widespread in the Andes, and most of them also extend into Central America, yet none is represented in south-east Brazil. *Schizoeaca* and *Oreophylax* share a similar throat-patch configuration with the *Asthenes* canasteros, and many taxonomic lists place these genera in adjacent positions. The problem with that arrangement, however, is that those members of *Asthenes* that build stick nests resemble the smaller *Phacellodomus* thornbirds in many ways, and these two genera are therefore listed next to each other in other linear sequences. Genetic studies are needed in order to resolve this issue; it seems likely that the genus *Asthenes* is polyphyletic.

Next in the current sequence are the small furnariids, generally known as spinetails, in the seven genera *Schoeniophylax*, *Synallaxis*, *Siptornopsis*, *Gyalophylax*, *Hellmayrea*, *Craniola*



and *Certhiaxis*. Some of these species possess a peculiar musty odour, but it is unknown just how many do, and any attempt to quantify this odour in terms of taxon distribution is difficult (see Morphological Aspects). The monotypic genus *Schoeniophylax* has sometimes been included within *Synallaxis*, but its voice is so utterly different from that of any *Synallaxis* spinetail that its retention as a separate genus is deemed warranted. It has to be remembered, of course, that genetic data may eventually indicate that this arrangement would make *Synallaxis* paraphyletic. With a total of 33 species, *Synallaxis* is the largest genus in the family. The possession of crown and shoulder areas that match in colour, and contrast with the rest of the plumage, is a frequent theme in the plumage pattern of its members, and many species have a partially concealed throat patch that can be made more conspicuous during displays (see General Habits). Despite its size, and although distinct lineages, based primarily on voice, can be identified within it, the genus is suspected of being monophyletic with the single exception of the Necklaced Spinetail (*Synallaxis stictothorax*). Three species, the Ochre-cheeked (*Synallaxis scutata*), White-whiskered (*Synallaxis candei*) and Hoary-throated Spinetails (*Synallaxis kollari*), were formerly placed in a separate genus *Poecilurus*, on the basis mainly of plumage patterns, but the three do not differ from other *Synallaxis* in any diagnosable way. *Synallaxis* spinetails are long-tailed, sneaky birds that characteristically forage in pairs low in dense vegetation. The partners keep in nearly constant contact by means of short, distinctive vocalizations, which are considered to be "songs" by some ornithologists and "calls" by others (see Voice).





With its fairly uniform plumage and thick, slightly decurved bill, the **Greater Thornbird** is typical of its genus. Other common features include stiffened crown feathers, and a moderately long, graduated tail that lacks the stiffened shafts found in many other furnariid genera. Thornbirds build large stick nests that rest on or hang conspicuously from tree branches. The presence of such nests, together with the birds' often explosive songs, provides the easiest means of detecting these normally retiring members of the family. The Greater Thornbird inhabits riparian undergrowth and scrub in south-central South American wetlands.

[*Phacellodomus ruber*, Rio Negro, Pantanal, Mato Grosso, Brazil. Photo: Edson Endrigo]

Following this large genus are three monotypic genera that may or may not warrant that status. *Siptornopsis* is closer in voice and behaviour to *Craniroleuca* than to *Synallaxis* and may eventually be shown to be embedded within the former. In addition, *Synallaxis* is almost certainly paraphyletic with respect to *Siptornopsis*. As many authors have pointed out, the Necklaced Spinetail is almost certainly just a low-elevation, undersized version of the Great Spinetail (*Siptornopsis hypochondriaca*). It may be better to include *Gyalophylax* within *Synallaxis*, especially since Whitney and J. F. Pacheco have pointed out that its voice has a suspicious resemblance to that of the Cinereous-breasted Spinetail (*Synallaxis hypospodia*). The genus *Hellmayrea* was included within *Synallaxis* until the analyses by M. Braun and T. A. Parker indicated that it is closer to, if not synonymous with, *Craniroleuca*. The latter study represents one of the earliest applications of knowledge of voice and behaviour, combined with molecular techniques, in constructing phylogenetic hypotheses.

In contrast to the three preceding genera, the polytypic genus *Craniroleuca* consists of 20 species of spinetail. These appear to represent at least four lineages, the degree of interrelatedness of which is unknown. All species have reddish-chestnut upperwing-coverts, remarkably homogeneous in hue. All but three have a contrasting crown coloration, usually also reddish-chestnut, and two of the three lacking this contrast, namely the Rusty-backed Spinetail (*Craniroleuca vulpina*) and Parker's Spinetail (*Craniroleuca vulpecula*), have the crown reddish-chestnut and of the same tone as the back. The members of this genus, more active, acrobatic and arboreal than *Synallaxis*, are also more characteristic of truly forested habitats, and are typical members of mixed-species flocks. Almost every type of wooded habitat in South America has a species of *Craniroleuca*, with the conspicuous exception of most *terra firme* forest in Amazonia.

The genus *Certhiaxis* consists of two species of spinetail closely associated with tropical marshes and water-edge habitats. Vaurie merged this genus with *Craniroleuca*, but, in view of the differences between the two genera in nest structure, foraging stratum, voice and general behaviour, it is not even certain that they are each other's closest relatives. Although the two *Certhiaxis* species are extremely similar in appearance, they differ dramatically in distribution and abundance. The Yellow-chinned Spinetail (*Certhiaxis cinnamomeus*) is common in many types of water-edge habitat over a broad geographical range; in contrast, the Red-and-white Spinetail (*Certhiaxis mustelinus*) is

an uncommon, local species known from just a few localities along the River Amazon and a few major tributaries.

The four softtails in the genus *Thripophaga* form a heterogeneous group, the monophyly of which has been questioned by many authors. Nevertheless, all four, in addition to exhibiting similarities in tail structure and head pattern, appear to have an affinity for habitats with dense vine tangles. Further, each one has a somewhat peculiar, patchy distribution. For example, the Plain Softtail, the only member of the genus *Thripophaga* that is not globally threatened (see Status and Conservation), has populations scattered in south-western Amazonia and also in drier woodlands south of Amazonia, an odd biogeographical pattern. The Russet-mantled Softtail (*Thripophaga berlepschi*) is known only from a few localities near the timber-line in the Andes of northern Peru, whereas the Orinoco Softtail (*Thripophaga cherriei*) is known from a single site in southern Venezuela. The Striated Softtail (*Thripophaga macroura*) is confined to just a few localities in south-eastern Brazil, but the patchiness of its occurrence may reflect simply the scattered nature of suitable tall forest in that badly deforested region. If *Thripophaga* is indeed discovered to be monophyletic, the odd distributions of its component species presumably constitute a relict distributional pattern that may, in turn, reflect an ancient, basal position in its branch of the Furnariidae.

Twenty-two canasteros make up the genus *Asthenes*. These are typically shy birds of habitats dominated by shrubs, grass and rocks, and many of the species carry the tail cocked. They have been considered a monophyletic group largely because of a shared plumage feature, all having a patch of contrasting colour on the throat or chin, and a similar general morphology, involving small size and a long, graduated tail. Such mutual features notwithstanding, at least three distinct lineages can be identified within the genus, and these may not be each other's closest relatives. A group of canasteros that construct nests mainly of sticks is found throughout the drier, lightly wooded or brushy habitats of southern South America. This group, the members of which lack stripes but have a contrasting tail pattern, is suspiciously similar to the smaller *Phacellodomus* thornbirds in plumage and, to a lesser degree, in nest structure and general behaviour; in fact, if one disregards the throat patch, the Short-billed Canastero (*Asthenes baeri*) and the Creamy-breasted Canastero (*Asthenes dorbignyi*) are strikingly similar in plumage and size to the Little Thornbird (*Phacellodomus sibilatrix*) and the Streak-fronted



The small, dark **Spotted Barbtail** is a rather unobtrusive inhabitant of montane forest in the Andes. It spends much of its time in quietly creeping up trunks and along branches, and can be difficult to detect. Climbing in this manner to search for food is a common foraging technique in many genera of ovenbirds. Adaptations developed to aid climbing include stiffened tail-feather shafts and, as shown by the Spotted Barbtail, stiff protruding "spines" at the tips of the rectrices, as well as strong legs and toes. Such modifications allow a level of agility that enables some furnariids to reach prey in almost every conceivable hiding place.

[*Premnoplex brunescens*  
*brunescens*,  
Pico Humboldt Trail,  
Mérida, Venezuela.  
Photo: Bernard van Elegem]



Thornbird (*Phacellodomus striaticeps*), respectively. Perhaps the stick-nesting canasteros are more closely related to *Phacellodomus* than they are to other *Asthenes*. Another group of canasteros, in this case building nests primarily of grass and having strongly striped plumage, is found in humid, usually grassy habitats in the same general region. At least one species of *Asthenes* is present in almost every open habitat in Andean and southern South America, from lush, mist-drenched timber-line brush to desolate rocky slopes.

The seven species of thornbird in the genus *Phacellodomus* are considered to form a monophyletic group partly because of a similarity in their nest types. All construct a large stick nest that

typically becomes pensile by virtue of its own weight, which causes the supporting branch to bend downwards. Otherwise, they all have a rather thick, slightly decurved bill, stiffened feathers on the forehead, and a graduated tail with broad, rounded rectrices that lack stiffened shafts. The name "thornbird" may suggest that these are inhabitants of arid scrub, but three species in the genus are partially to strongly associated with marshes or water edge.

Following *Phacellodomus* is the monotypic *Clibanornis*, which is placed in this position because it has been considered by some to be more similar to *Phacellodomus* than to any other genus. Nothing in its habitat, voice or foraging behaviour, however, seems to suggest a relationship to the thornbirds. Its nest,

The beautifully marked, richly coloured **Fulvous-dotted Treerunner** is an inhabitant of the Andean forest of Colombia and Ecuador. The exposed shafts of the tail-feather tips are the clue to its primary foraging method, that of climbing trunks and branches. Even a casual observer, surveying the full spectrum of ovenbirds, could not fail to comment on the fact that brown is predominant in the plumage of the majority of the family. Despite this apparent constraint, some, such as the Fulvous-dotted Treerunner, have such rich browns that they are truly colourful. Further, pale feathers with contrasting dark margins, as on the throat of this species, create stunning patterns in some furnariids.

[*Margarornis stellatus*,  
north-west Ecuador.  
Photo: Doug Wechsler/  
VIREO]







Large, rather striking and placed in a monotypic genus, the **Point-tailed Palmcreeper** is a specialist species restricted to palm groves in Amazonia. It is arboreal and unobtrusive, and it feeds by searching palm fronds and their bases. It favours moriche palms (*Mauritia*), which grow only in small groves often separated by great distances, suggesting that the palmcreeper is capable, when required, of dispersing widely in order to find suitable habitat. This degree of specialization represents an extreme in the tendency of many Neotropical birds to show narrow habitat use, although only a few are restricted to palms. Interestingly, another ovenbird, the *Araucaria* Tit-spinetail (*Leptasthenura setaria*), exhibits an equally strict requirement for a particular plant species, albeit a more widespread component of the flora where it occurs. Specialization in habitats with unusual vegetation structure, however, is not unusual in the family as a whole, a fact that is perhaps reflected by the mystifyingly small ranges of certain species. These can be found in some places but often appear not to be present in apparently suitable habitat nearby. In these cases, a species' presence or absence may be dictated by fine-scale habitat parameters that are not readily apparent to the human observer. Members of the *Furnariidae* have successfully occupied every available terrestrial habitat in South America, and two species are even restricted to rocky, intertidal marine habitats, a feat unparalleled among passerine birds. Ovenbirds are prominent components of all bird communities on the continent, and in the low-diversity communities of harsh environments, they often make up as much as 25% of all the avian species present.

[*Berlepschia rikeri*,  
Allpahuayo-Mishana  
Reserved Zone,  
Loreto, Peru.  
Photo: José Álvarez  
Alonso]



One of few furnariids that penetrate as far north as Mexico is the **Scaly-throated Foliage-gleaner**.

As this attractive, small, arboreal ovenbird of montane forest in Middle America and the northern Andes often feeds low down and in the extremities of trees, it is usually fairly easy to see. Of the other two members of the genus, one occurs in Andean montane forest from Venezuela to Bolivia, and the other is an Atlantic Forest endemic. The widespread Scaly-throated Foliage-gleaner may consist of more than one species. Species limits within the family are constantly being challenged as knowledge of geographical variation and vocal differences increases.

[*Anabacerthia variegaticeps*  
*variegaticeps*,

Quintana Roo, Mexico.  
Photo: Patricio Robles Gil]



A resident of humid lowland forest in Central and South America, the long-billed and drab **Striped Woodhaunter** is in some ways reminiscent of a small woodcreeper (*Dendrocolaptidae*).

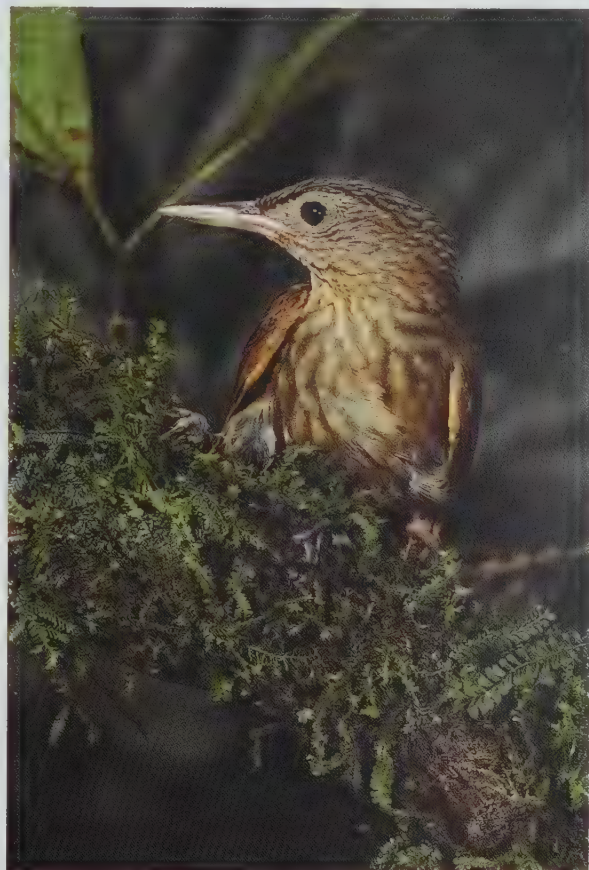
Striped Woodhaunters forage by gleaning and burrowing for invertebrates and small vertebrates (lizards and frogs) in debris and dead leaves and among epiphytes. There are two discrete populations of this ovenbird, one in Central America and southwards, east of the Andes, to western Ecuador, and the other occurring east of the Andes. These two populations, which differ in plumage and have markedly different vocalizations, probably represent two species.

[*Hyloctistes subulatus*  
*subulatus*,  
5 km south-west of Taisha,  
Morona-Santiago,  
Ecuador.  
Photo: Doug Wechsler/  
VIREO]

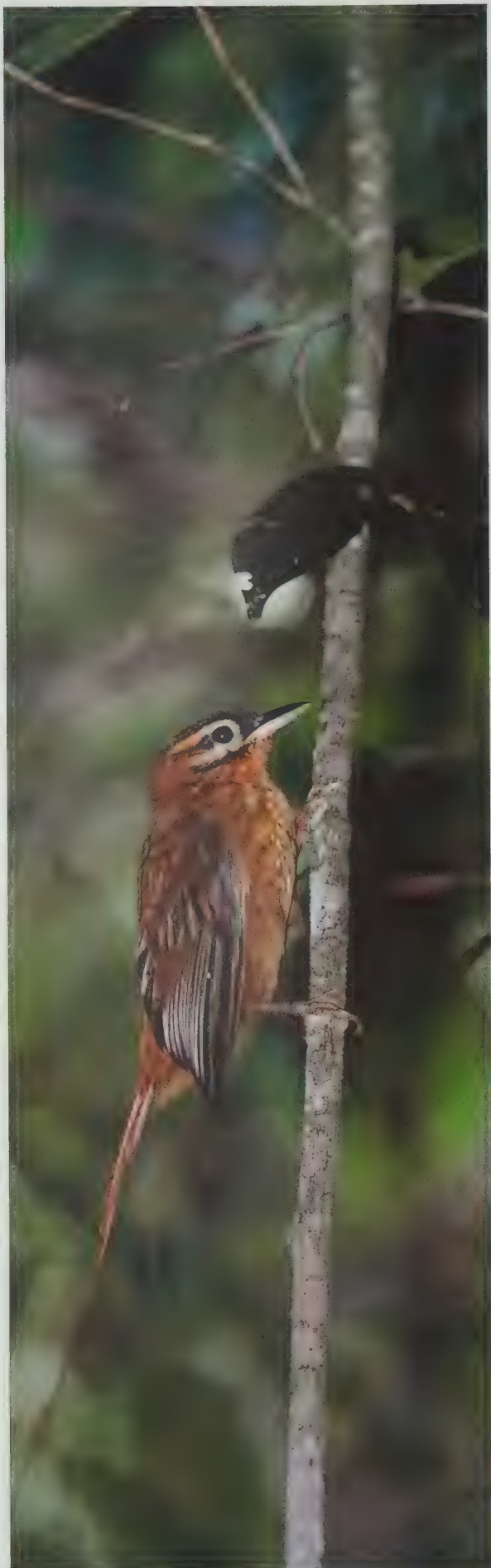
which would certainly provide clues as to its proper relationships, has yet to be discovered. The next two genera in the sequence are the similarly monotypic *Anumbius* and *Coryphistera*. Similarities in nest structure, as identified by Zyskowski and Prum, support the notion that these are each other's closest relatives, but, beyond that, their relationships are obscure. The plumage pattern of each is unusual. The Lark-like Brushrunner is a peculiar bird not only in plumage pattern, but also in its degree of sociality. It is perhaps the only member of the family that characteristically forms single-species flocks. During the breeding season, these are small enough, usually of five to seven individuals, that kinship among flock-members is a possibility, and this species is therefore perhaps the most likely of the Furnariidae to have an unusual social system. Further contributing to the oddity of this species is the fact that its flocks typically travel by running along the ground, which is unusual for terrestrial, gregarious birds other than Galliformes; many gregarious birds of open country feed together in flocks on the ground, but, when they move, flight is the more typical means. The Firewood-gatherer is almost as peculiar. In plumage and shape it recalls an oversized pipit (*Anthus*), and the conspicuous white markings in the outer rectrices are very unusual among the Furnariidae.

The next set of genera constitutes a collection of small, highly arboreal, and acrobatic to scansorial species that may or may not form a monophyletic group. The Spectacled Prickletail, in the monotypic genus *Siptornis*, is a poorly known species with no obvious close relatives. Although having no unique plumage or morphological features, it does not fit neatly into or even near any other genus. The next three genera, *Metopothrix*, *Xenerpestes* and *Acrobatornis*, represent perhaps the most unusual species in the family in terms of coloration and distribution (see Morphological Aspects), and Whitney and co-workers suspect that, for these and other reasons, they are closely related. Next come the three species of barbtail in the genera *Premnornis* and *Premnoplex*. These are notorious sneaks inhabiting montane forest, and their true abundance is often revealed only by mist-netting studies. Adding to its reputation as a "ghost", the Rusty-winged Barbtail has possibly the largest geographical range of any Neotropical species for which published descriptions of vocalizations are essentially lacking. A fourth barbtail, the Roraiman Barbtail (*Roraimia adusta*), endemic to the tepui re-

gion of southern Venezuela and adjacent Brazil and Guyana, and placed in a monotypic genus, may be more closely related to the *Margarornis* treerunners than to the three *Premnoplex* and *Premnornis* barbtails. The four species of treerunner are perhaps the most "professionally" scansorial species in the family. The stiffened tail with bare, slightly bent shaft tips ranks with that of







*Pygarrhichas* as the most specialized of any furnariid tail for climbing, and the central rectrices appear more drastically modified than are those of some woodcreepers in the genus *Dendrocincla*. Rudge and Raikow found that *Premnornis*, *Premnoplex*, *Roraimia* and *Margarornis* share similar adaptations for climbing in the hind-limb musculature.

Combined in the genus *Pseudoseisura*, the four cachalotes are among the largest species in the family. Although superficially resembling jays (Corvidae) in size, shape and behaviour, they betray their ovenbird bloodlines by their raucous, staccato voices and their huge stick nests, some of which can support the weight of a human. The cachalotes have no obvious close relatives. In their "demeanour", plumage and loud duets they are vaguely reminiscent of the *Furnarius* horneros, but their nests differ dramatically. R. S. Ridgely's suggestion that they are "exaggerated" thornbirds has as much merit as any, especially since the nests of the two genera are somewhat similar.

Of all furnariids, the two tuftedcheeks comprising the genus *Pseudocolaptes* are the species most highly specialized on searching tank bromeliads and other epiphytic vegetation. Preliminary observations suggest that only one parent attends the nest, a phenomenon that may be unique within the family. As quantified by S. Sillett and co-workers, *Pseudocolaptes* exhibits marked sexual dimorphism in bill length, again unlike any other furnariid (see Morphological Aspects). The fact that the female is the sex with the longer and straighter bill is also very unusual, and perhaps unique, among the Passeriformes, but parallels the direction of sexual dimorphism shown by many woodpeckers (Picidae) and hummingbirds. Likewise, the Point-tailed Palmcreeper in the monotypic genus *Berlepschia* has no obvious close relatives, but its general morphology has led to its placement next to *Pseudocolaptes* in traditional sequences. In its notorious degree of specialization on palm trees (see Habitat) it is perhaps unmatched by any other Neotropical bird species.

The Striped Woodhaunter occupies a genus, *Hylocistis*, currently treated as monotypic only because data sufficient for splitting it into two species-level taxa have not been published. It is typically placed near the previous two genera on account of similarities in bill shape, which is long and pointed, and was included by Vaurie in what is generally considered an unacceptably broad genus *Philydor*. Its true relationships, however, are uncertain. In shape and plumage, Amazonian populations of *Hylocistis* look more like *Xiphorhynchus* woodcreepers than like other ovenbirds, although they bear at least a superficial resemblance to the furnariid genera *Cichlocolaptes*, *Ancistrops* and *Premnornis*.

The ten genera *Anabacerthia*, *Syndactyla*, *Simoxenops*, *Ancistrops*, *Philydor*, *Anabazenops*, *Cichlocolaptes*, *Thripadectes*, *Automolus* and *Hylodyptes*, mostly called "foliage-gleaners", may indeed form a monophyletic group. They have several features in common. These include habitat preferences, mostly humid or semi-humid forest, and foraging behaviour, involving searching with side-to-side movements along mostly horizontal branches, and to varying degrees searching dead leaves suspended above the ground (see Food and Feeding). In addition, they choose similar nest-sites, those species for which relevant information is available using cavities and tunnels.

Although none of these features is sufficient evidence for monophyly, stronger evidence comes from the intermediacy of some of the species, and from the fact that a number of them have been, or are likely soon to be, switched from one genus to another. For example, the Dusky-cheeked Foliage-gleaner (*Anabazenops dorsalis*), long considered a member of *Automolus*, has been demonstrated convincingly by A. Kratter and Parker to be the sister-species to the White-collared Foliage-gleaner (*Anabazenops fuscus*). The Russet-mantled Foliage-gleaner (*Philydor dimidiatum*) was at one time placed in the genus *Syndactyla*, and in this context the history of the taxon *mirandae*, described from Goiás, in Brazil, is of interest. Formerly treated as a race of the Buff-browed Foliage-gleaner (*Syndactyla rufosuperciliata*), *mirandae* was later believed to be referable to the Russet-mantled Foliage-gleaner, being probably a synonym of the latter's subspecies *baeri*. When the results of a recent study by M. B. Robbins and K. J. Zimmer, based on vocalizations and other characters, are published, it seems likely that the Russet-mantled Fo-

**The Black-capped Foliage-gleaner** is a rather uniform bird with a well-marked facial pattern, a plumage typical of the genus *Philydor*. These foliage-gleaners inhabit humid forest throughout tropical and subtropical South America. Most, like this species, feed quietly in the forest canopy and subcanopy. All forage actively and are skilful acrobats, enabling them to reach many food resources that are unavailable to other, less agile bird species. In the forests in which they occur, most members of this genus are almost always found in mixed-species feeding flocks of passerines. It has been noted that, whereas many bird species will sing occasionally after a peak of activity at dawn, foliage-gleaners in the genus *Philydor* rarely sing after dawn. This trait is shared by other species of furnariid and also by the woodcreepers (*Dendrocolaptidae*), and is perhaps yet more evidence of a close link between the foliage-gleaner lineage in the ovenbirds and the woodcreepers. Some classifications treat the foliage-gleaners, currently split into some ten genera in total, as representing only three genera. The different genera certainly share common traits such as habitat preference, foraging techniques and the use of cavities for nesting. In addition, generic separation has been rather fluid in the past, with some species being assigned first to one genus and then subsequently to another. Clearly, more research is required in order to clarify the phylogeny of this group of birds.

[*Philydor atricapillus*, Ubatuba, São Paulo, Brazil. Photo: Edson Endrigo]



The large, boldly marked and stout-billed **Flammulated Treehunter**

is a furtive denizen of the montane forest of the Andes from Venezuela to Peru, with an outlying population in the Santa Marta mountains of northern Colombia.

It favours dense undergrowth, including bamboo, and can as a consequence be hard to observe. Strong associations with bamboo thickets are not uncommon in the Furnariidae, some species of which are even totally restricted to this habitat. The seven *Thripadectes* treehunters are rather similar and are scattered mainly throughout the Andes, although one species occurs in the mountains of Central America. They nest in burrows usually dug into earth banks.

[*Thripadectes flammulatus*  
*flammulatus*,  
Carchi, Ecuador.  
Photo: Doug Wechsler/  
VIREO]



liage-gleaner will be returned to the genus *Syndactyla*; it certainly appears closer to that genus than to other *Philydor* species in terms of its voice and its upturned lower mandible. Similarly, the Rufous-necked Foliage-gleaner (*Syndactyla ruficollis*) had been placed in the genus *Automolus* until Parker pointed out that its vocalizations indicated that it belonged in *Syndactyla*. The Chestnut-capped Foliage-gleaner (*Hylocryptus rectirostris*), too, was for many decades considered to be an *Automolus*, despite its strikingly different plumage. Several authors have wondered whether the White-throated Foliage-gleaner (*Automolus ro-raimae*) should be placed in *Philydor*; in fact, it was originally described in that genus, and, even after it was moved to its present genus, the juvenile of this foliage-gleaner was long thought to represent a distinct species, "*Philydor hylobius*". The suspicious similarity in plumage and size between the Lineated Foliage-gleaner (*Syndactyla subalaris*) and the Striped Treehunter (*Thripadectes holostictus*) clouds the boundaries between those two genera, which are seemingly separated mainly by bill shape, perhaps the least reliable avian phenotypic character for predicting phylogenetic relationships. Likewise, the Chestnut-winged Hookbill, the sole member of the genus *Ancistrops*, appears to be excluded from the genus *Philydor* only by bill shape. Vaurie attempted to solve these problems by merging the ten genera into three, *Philydor*, *Automolus* and *Thripadectes*, but the reaction of most ornithologists familiar with this group is that this arrangement does no more than reduce the number of "problem" taxa and that, in order to eliminate all such problems, the merger of all ten genera into a single genus would be the only solution. This, however, would result in a genus that most modern systematists would regard as being unacceptably heterogeneous.

The next genus in the current sequence, *Sclerurus*, is sometimes placed at the very end of the family. This position could well be considered a "better" one in that it emphasizes that the leaf-tossers are not clearly close to any other genus with the possible exception of the monotypic *Lochmias*, which is placed next to *Sclerurus* in most treatments. The stiffened feather shafts of the tail of the leaf-tossers are unusual among ground-foraging birds. Leaf-tossers have a conspicuously long, thin, rather straight bill and a broad tail. Using the bill, they flick aside leaf litter, rather than "tossing" it. Their songs, consisting of mainly clear,

whistled notes, are unlike any others within the Furnariidae. *Sclerurus* is almost certainly monophyletic, but it appears to consist of two or three lineages. All six leaf-tossers are birds of humid lowland or lower montane tropical or subtropical forest. Traditional sequences group *Lochmias* with *Sclerurus* because the two share stiffened tail feathers and terrestrial foraging habits, both nest in tunnels, and they are similar in general shape. The nests themselves, however, differ substantially, being a mere pad in the case of *Sclerurus* but a domed mass of plant material in *Lochmias*. Indeed, of the many ovenbirds that nest in holes in banks, *Lochmias* is the only one that constructs such a ball of plant matter in which to lay its eggs.

Making up the final set of genera in the Furnariidae are species that are specialized branch-foragers or climbers, and that nest in tree cavities. They are almost certainly not a natural group, as has already been discussed above with regard to the monotypic genus *Pygarrhichas*. *Megaxenops*, also monotypic, is placed in this group because its upturned lower mandible is thought by some to be reminiscent of an oversized *Xenops* bill, but nothing else in its biology suggests a relationship with *Xenops*. A third monotypic genus, *Heliobletus*, shares some plumage features with the larger-sized *Cichlocolaptes*, and has a similar distribution, but whether the two are close to one another or whether one or both are closer to *Xenops* is uncertain. Some taxonomists have included *Heliobletus* in the latter genus, from which it is possibly not distinguishable except by minor plumage characters. *Xenops* itself is found largely in lowland tropical forests, with some populations in deciduous and lower montane forests. Three of the four species exhibit an unusual tail pattern and a conspicuous whitish malar streak, and are similar in foraging behaviour and voice. The two widespread species, the Plain Xenops (*Xenops minutus*) and the Streaked Xenops (*Xenops rutilans*), are among the most widely distributed furnariids in Neotropical forests, and are well known for their distinctive foraging technique, that of hammering open tiny dead branches and twigs. Little is known of the foraging behaviour of the Slender-billed Xenops (*Xenops tenuirostris*), but the Rufous-tailed Xenops (*Xenops milleri*) differs from the other three in many ways and has been placed by some in its own genus, *Microxenops*. Although it does share a somewhat unusual and conspicuous plumage feature, a broad





With its robust body, short bill and rather plain, featureless plumage, the **Olive-backed Foliage-gleaner** is typical of the genus *Automolus*. Members of this genus often have a contrastingly coloured throat, but lack the prominent facial markings that typify other genera of foliage-gleaners. Like its congeners, this species inhabits the understorey of humid forest, where it is inconspicuous, but it often draws attention by its repeated, rather penetrating calls. Distributed throughout the humid forest of the Amazon Basin, it is an active, acrobatic feeder that specializes in searching hanging clusters of dead leaves for prey hiding within them.

[*Automolus infuscatus cervicalis*, Iwokrama Forest Reserve, Guyana. Photo: Doug Wechsler/VIREO]

wingband, with the other three, it lacks their wedge-shaped bill, black tail markings and pale malar streak. The three "typical" xenops are rather remarkably similar in bill shape and small body size to the tiny piculets (*Picumnus*) of the woodpecker family, presumably reflecting convergence due to similar foraging behaviour, namely the chiselling of dead twigs. Less easily explained are the facts that they also share an unusual tail pattern, in which black vanes contrast with paler vanes to produce a longitudinally striped effect, and that they have similar songs, characterized by very high-pitched trills. Although xenops will adopt piculet holes for their nest-sites, no close, direct association has been reported in terms of foraging behaviour.

As is evident throughout the preceding narrative, the limits of many genera within the Furnariidae are controversial, and reanalyses using modern phylogenetic methods will almost certainly reveal inconsistencies and erroneous assumptions. The underlying problem is that traditional taxonomy, maintained largely by historical momentum rather than by explicit analyses, has placed too much emphasis on "plastic" characters, particularly bill shape. As W. J. Bock noted long ago, bill shape is perhaps the least suitable morphological character upon which to base generic limits. In addition, the Furnariidae are particularly homogeneous with respect to plumage coloration and pattern (see Morphological Aspects). Moreover, traditional taxonomy at the generic level did not incorporate any data relating to voice and behaviour, characters that, as field biologists know, often provide strong phylogenetic information.

Vaurie's 1980 monograph represents the climax of the "broad concept" of the genus, and marks the end, it is hoped, of an era of rampant but weakly supported lumping of genera by those with little or no field experience of the taxa involved. Vaurie subsumed 23 of the genera recognized in 1970 by R. Meyer de Schauensee, and thereby produced large conglomerations of species within a genus in which the only supporting evidence of such relatedness was nest structure and general similarity in body size and shape. Thus, *Thripophaga* and *Philydor*, in particular, were expanded dramatically. These expanded genera are still used by some taxonomists today, even though they are, in many cases, probably paraphyletic or polyphyletic. Fortunately, J. W. Fitzpatrick's review alerted most ornithologists to the many problems with Vaurie's classification that were immediately obvious

to those familiar with the family. As a result, the majority of subsequent authors retained the generic arrangement used by J. L. Peters in his 1951 checklist and adopted by Meyer de Schauensee in 1966 and 1970.

Nevertheless, the generic limits established by Peters are not without problems. In fact, they are controversial with regard to almost all major genera. How a genus is delimited is largely arbitrary, so long as, on the one hand, the component taxa comprise a monophyletic group and, on the other, some logical "break" ex-



The small and rather delicate **Sharp-billed Treehunter** feeds at middle and canopy levels in humid and montane forests throughout its restricted range, which is centred on south-east Brazil. It specializes in gleaning arthropods from slender branches and twigs, and is also often seen to investigate dense tangles of vines and creepers. It is an acrobatic feeder in the manner of many foliage-gleaners, but its taxonomic position is uncertain. The Sharp-billed Treehunter shares some features with Xenops, but it differs vocally from those species. It currently occupies a monotypic genus.

[*Heliobletus contaminatus contaminatus*, Campos do Jordão, São Paulo, Brazil. Photo: Edson Endrigo]



Both the **Streaked Xenops** and the **Plain Xenops** are representatives of the rather unusual birds of the genus *Xenops*. These two species have a decidedly upturned lower mandible and, although not obvious in these photographs, the bill is also compressed laterally. This interesting bill morphology is related to their foraging behaviour, that of hammering twigs and small branches to expose invertebrate prey, usually while climbing along thin branches and twigs and into vine tangles. The soft tapping sound heard as these tiny birds forage often leads to their detection in the field.

Features that the xenops share include conspicuous wingbands.

Three members of the genus, which consists of only four species, have an unusual tail pattern (again, not well illustrated here) and peculiar silvery-coloured malar stripes.

In terms of size, bill structure and foraging behaviour, therefore, they display a remarkable convergence with the piculets (*Picumnus*); bizarrely, they also have a similar tail pattern and vocalizations. These two species of xenops are remarkably widespread, and the genus is represented in all the tropical and subtropical forests of South America.

The Plain Xenops illustrated here is of the nominate subspecies, which has a disjunct range covering the forests of coastal east Brazil, eastern Paraguay and north-east Argentina. Smaller than the other subspecies, it differs further from them in a number of plumage features and may well constitute a separate species, although no obvious vocal differences have been detected to date.

[Above:

*Xenops rutilans rutilans*,  
Cantareira, São Paulo,  
Brazil.

Below:

*Xenops minutus minutus*,  
São Lourenço da Serra,  
São Paulo, Brazil.

Photos: Edson Endrigo]







ists between it and other units thus defined. Many controversies concerning generic limits are, therefore, essentially of minor importance. The issue of monophyly, however, is of critical importance if a classification is to be based on phylogeny, for the units within a taxon must all share a common ancestor, and all must be more closely related to each other than they are to any other taxa outside the group.



Although the classification currently used for the Furnariidae avoids many potential problems of paraphyly by using narrowly defined genera, many of which are monotypic, two of Vaurie's mergers at the genus level have been retained. First, the merging of *Geobates* into *Geositta* is necessary to avoid possible paraphyly of *Geositta*. The Campo Miner (*Geositta poeciloptera*), the sole species in the former *Geobates*, is probably a "paedomorphic" species, one in which what are normally juvenile characters are retained in the adult stage, with the short bill and tail being merely "tag-along" features on the route towards the evolving of smaller body size. Otherwise, this species is very similar in plumage and in display behaviour to other miners, particularly the Common Miner (*Geositta cunicularia*). Second, it is desirable to merge *Poecilurus* into *Synallaxis* because the nests and voices of the three spinetails previously placed in *Poecilurus* are extremely similar to those of some *Synallaxis* species; indeed, the similarity is greater than that among some species traditionally placed in *Synallaxis*. In fact, there appears to be no character that allows diagnosis of *Poecilurus* as a genus other than a composite of individual species' plumage patterns. Again, potential paraphyly of *Synallaxis* with respect to *Poecilurus* is avoided by the merger of these two genera.

Problems concerning species limits are numerous in the Furnariidae. As with many large Neotropical families, the hitherto existing species-level taxonomy is in general the product of a generation of taxonomists who had little appreciation of vocal differences and of the importance of these in signalling species limits. Numerous empirical studies within the last three decades have demonstrated that vocal differences are strongly associated with breaks in gene flow between populations, often with minimal accompanying differences in plumage. The lesson is that plumage differences among populations often correlate with more dramatic, biologically important differences in vocalizations that have consequences for gene flow. These plumage differences were dismissed as inconsequential in determining species limits by many authors who, in retrospect, used a version of the Biological Species Concept that too frequently emphasized similarities rather than differences.

With the benefit of detailed recent studies of various tropical suboscine birds undertaken by Whitney, Isler and Isler, Zimmer, T. S. Schulenberg, N. Krabbe, C. Marantz, A. Aleixo and others, it can be predicted that virtually all widespread "species" of suboscines that show discrete geographical variation in

One of the most distinctive of all furnariids is the

#### **White-throated**

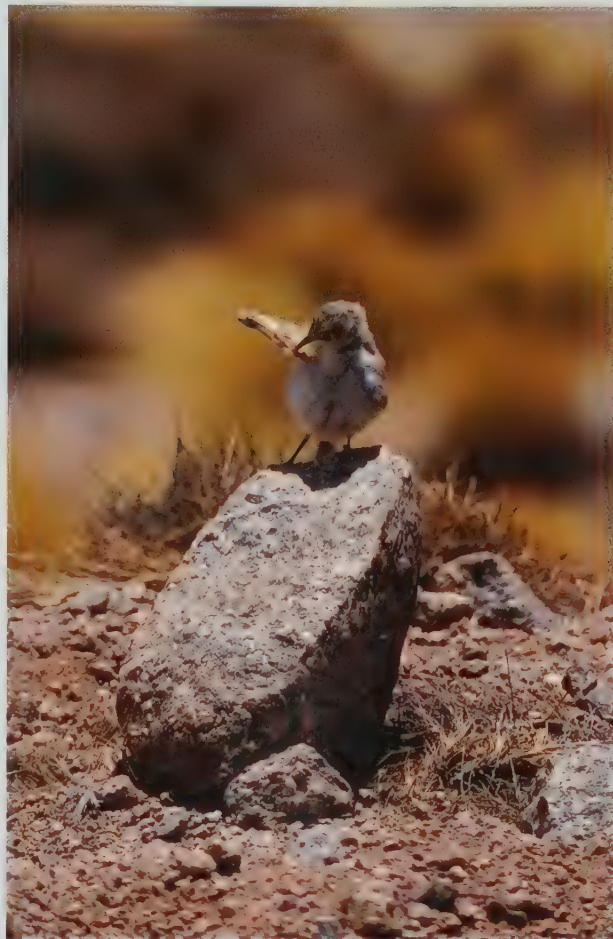
**Treerunner** with its long, upswept bill. This arboreal forager locates its food by climbing around trees in a manner reminiscent of a nuthatch (*Sitta*), even moving downwards head-first on occasion. Typical ovenbird adaptations for this climbing lifestyle include a well-stiffened tail, the feathers of which have long protruding "spines". Recorded prey items of this unusual species include adult and larval beetles, and these are taken by the probing and active excavation of tree branches and trunks. The White-throated Treerunner is monotypic and has no obvious close relatives. It is endemic to the southern beech (*Nothofagus*) forests of southern Chile and Argentina.

[*Pygarrhichas albogularis*, Neuquén, Argentina.  
Photo: Darío Podestá]

The preening behaviour shown by this **Rufous Hornero** is common to all birds. Preening is a vital and routine activity that ensures that the plumage is maintained in good condition. For any flying bird it is obviously essential that the flight-feathers be kept in good working order, but preening the body feathers also ensures that their important insulating properties are maintained. This individual has almost certainly been stimulating the preen gland above the tail to secrete oil on to its bill. Preen oil is thought to contain waterproofing agents, as well as having anti-fungal and anti-bacterial properties.

[*Furnarius rufus commersoni*, Pantanal, Mato Grosso, Brazil.  
Photo: Xavier Ferrer & Adolf de Sostoa]





This **Creamy-rumped Miner** is portrayed preening, wing-stretching and sunning itself. Little information has been published on the comfort behaviour of the ovenbirds, but it probably does not differ much from that of other passerines. Preening is an important task for all birds, and much time is devoted to this activity each day. In the two left-hand pictures the bird can be seen precisely preening individual feathers by carefully nibbling them with the bill tip, zipping together feathers that have become disarranged and adding preen oil to each feather. During the process of preening, dirt particles, feather debris and parasites are removed. Wing-stretching (top right) rearranges the flight-feathers in the correct order after preening has taken place. Both during and after bouts of preening, it is not uncommon to see birds sunning themselves (bottom right). Here, the miner has ruffled up the feathers on the back to expose the underlying surface to the sun. Sunning in this way may have a number of benefits. For species that inhabit harsh, cold environments, such as the Creamy-rumped Miner, which occurs at high elevations in the Andes of central Chile and Argentina, it may be important in the efficient maintenance of body temperature. Sunning may also be beneficial in that ultra-violet light breaks down preen oil to vitamin D, which is then ingested by the birds during preening. It is also thought that the raising of the body temperature in this way may encourage parasites to be more active and therefore more easily located and removed.

[*Geositta isabellina*,  
Salta, Argentina.  
Photos: José & Adriana  
Calo]





Bathing in water is an important part of the process of maintaining a bird's plumage in good condition and is usually a precursor to preening. This **Rufous Hornero** is adopting one common bathing strategy by standing in water. It is ruffling its feathers, flicking its wings and tail and ducking its head beneath the surface to splash water all over its body. During this process, the feathers do not become waterlogged but merely wetted. The bird emerges after a short time to shake and flap the excess water from its plumage before starting to preen. Notwithstanding a dearth of information on the comfort behaviour of the Furnariidae, it seems highly likely that many ovenbirds living in more arid regions will indulge in dust-bathing activity, which serves the same purpose. In this form of bathing, dust replaces water and the bird simply throws dust over itself and allows this to run through its plumage before shaking it all off. In either case the aim of bathing is much the same, namely the removal of dried skin, debris, parasites and excess preen oil. Some species of ovenbird have been observed to perform anting, and this activity may be more widespread among the Furnariidae than current observations indicate. Anting involves either grabbing ants and applying them to the plumage or literally bathing in swarms of ants. The insects discharge formic acid into the plumage of the bird, and this action either benefits the bird in terms of reducing the number of active parasites that it carries or simply makes the ants more palatable before being eaten. The precise reason for this intriguing behaviour remains a matter of conjecture.

[*Furnarius rufus paraguayae*,  
Rio Pilcomayo  
National Park,  
Formosa, Argentina.  
Photos: José & Adriana  
Calo]



phenotypic characters across major barriers to gene flow, such as Amazonian rivers and Andean dry canyons, will be found to consist in fact of multiple biological species-level taxa. Within the Furnariidae, prime examples are the Common Miner, the Pale-breasted Spinetail (*Synallaxis albescentis*), the Striped Woodhaunter, the Scaly-throated Foliage-gleaner (*Anabacerthia variegaticeps*), the Buff-throated Foliage-gleaner (*Automolus ochrolaemus*), the Ruddy Foliage-gleaner (*Automolus rubiginosus*) and the Plain Xenops. Within each of these taxa, qualitative vocal differences already noted among populations are such as to hint strongly that more than one species is involved. Zimmer has recently demonstrated precisely this for three taxa each hitherto considered a single species, namely *Cranioleuca vulpina*, *Pseudoseisura cristata* and *Automolus infuscatus*.

Some authors already treat certain furnariid taxa as full species even though published data in support of such treatments are lacking or unsatisfactory. The splitting of the Striped Woodhaunter into two species, the "Eastern Woodhaunter" as *Hylocistis virgatus* and the "Western Woodhaunter" as *H. subulatus*, is one example. Others include the recognition of the race *chinchipensis* of the Necklaced Spinetail, the race *dissita* of the Rusty-backed Spinetail and the race *maculipictus* of the Freckle-breasted Thornbird (*Phacellodomus striatocollis*) as full species, under the respective names of "Chinchipe Spinetail", "Coiba Spinetail" and "Spot-breasted Thornbird". Although these "splits" are almost certainly valid, it is considered wiser at present to adopt a conservative approach and to await the results of formal analytical studies. Further "species" that probably contain two or more species-level taxa include the Plain Softtail, the Red-eyed Thornbird (*Phacellodomus erythrophthalmus*), the Rufous-rumped Foliage-gleaner (*Philydor erythrocerum*) and the Sharp-tailed Streamcreeper (*Lochmias nematura*). In other cases, involving taxa treated as allospecies, current species limits do not seem to accord with the delimitations that would be made on the basis of voice or other characters. This applies, for instance, to the Plain-crowned (*Synallaxis gujanensis*) and White-lored Spinetails (*Synallaxis albilora*) and to the Line-cheeked (*Cranioleuca antisiensis*) and Baron's Spinetails (*Cranioleuca baroni*).

On the other hand, some widely distributed taxa exhibit surprisingly little clear vocal differentiation, at least according to what has appeared in the literature. For example, the Buff-browed

Foliage-gleaner, the Buff-fronted Foliage-gleaner (*Philydor rufum*) and the Streaked Xenops have large ranges in which they show fairly pronounced geographical variation in plumage, but published descriptions do not indicate any major differences in voice throughout the range of any one of them. Quantitative analyses, of course, could easily dispel these qualitative impressions. Furthermore, it is clear from some examples that some barriers to gene flow are not accompanied by dramatic vocal differences. Consider, for instance, the case of the recently discovered Bolivian Spinetail (*Cranioleuca henricae*). S. Mayer and J. Fjeldså were unable to detect any major vocal differences between it and its sister-species, the Stripe-crowned Spinetail (*Cranioleuca pyrrhophia*), yet their ranges are essentially parapatric in central Bolivia, with no sign of gene flow between the two phenotypically very different populations. In fact, many species-level taxa in the genus *Cranioleuca*, in particular, seem to have very similar voices, although the caveat must be added that formal vocal analysis is lacking. Whether subtle differences in vocalizations, pronounced plumage differences without corresponding vocal differences, or other characters result in reproductive isolation has yet to be determined.

At the opposite extreme, several taxa generally treated as species are maintained at such largely through historical tradition, rather than on the basis of objective evidence or analyses. Examples of taxa that could be considered conspecific include the Plain-breasted (*Upucerthia jelskii*) and Buff-breasted Earthcreepers (*Upucerthia validirostris*), the Surf (*Cinclodes taczanowskii*) and Seaside Cinclodes (*Cinclodes nigrofumosus*), Berlepsch's (*Asthenes berlepschi*) and the Creamy-breasted Canasteros, the Beautiful and Pearled Treerunners (*Margarornis squamiger*), the Buffy (*Pseudocolaptes lawrencii*) and Streaked Tuftedcheeks (*Pseudocolaptes boissonneautii*), and the Spotted (*Premnoplex brunescens*) and White-throated Barbtails (*Premnoplex tatei*). Recognition of the Royal Cinclodes (*Cinclodes aricomae*) as a species separate from the Stout-billed Cinclodes (*Cinclodes excelsior*) is a more recent tendency, but equally lacking in convincing documentation. Nevertheless, in these cases current tradition has been followed to avoid what most would consider a worse mistake, namely lumping forms that really merit treatment as separate species. Although justification for species rank is weak, relying primarily on plumage and micro-habitat differences,

Display with singing is the primary method used by many passerines to announce territorial occupation and boundaries and, if need be, to attract a mate. The **Sharp-billed Canastero**, while singing from the tops of bushes in the early morning, opens its wings to expose the underwing and its prominent lining. This visual display probably helps to emphasize the vigour of this male in the eyes of its competitors and potential mates. Ovenbirds are frequent songsters, but most of them produce rather uniform, unappealing, invariably harsh or buzzy vocalizations. Little detailed information exists on this aspect of ovenbird biology, and no thorough bioacoustic analysis of any furnariid has yet been undertaken.

[*Asthenes pyrrholeuca*  
*pyrrholeuca*,  
Lago Cardiel,  
Santa Cruz, Argentina.  
Photo: José & Adriana Caloj]







In the open campo and cerrado habitats that it occupies in southern Brazil, the **Campo Miner** uses song and wing-raising displays to declare its territory and to advertise its fitness for breeding. These birds often perch on termite mounds and repeatedly deliver their simple song. While singing, they raise their wings to expose the conspicuous broad chestnut and black wingbands. This species' song consists of a simple, almost musical "sweep" note repeated over and over again. Many ovenbird songs are similarly simple, consisting mainly of short series of harsh or buzzy notes that speed up, slow down and fall or rise in pitch. Miners also undertake short display-flights in which they hover up to 50 m above the ground while singing and, again, displaying their wing and tail patterns. Song-flights and conspicuous displays of this type are common strategies adopted by birds living in open habitats. The Campo Miner specializes in rapidly colonizing areas of recently burned grassland, and it must be semi-nomadic and capable of dispersing widely to locate suitable breeding habitat. It is currently considered to be a Near-threatened species, principally because of agricultural intensification and plantation development in its cerrado habitats. This species is often included in a separate, monotypic genus (*Geobates*), a treatment based on the fact that it is smaller than the other miners, has a shorter tail and bill and a different underwing pattern, and has a more easterly distribution.

[*Geositta poeciloptera*,  
Serra da Canastra  
National Park,  
Minas Gerais, Brazil.  
Photos: Edson Endrigo]



A singing **Bay-capped Wren-spinetail** delivers dry, insect-like trills, in bursts 2-3 seconds long, from well-hidden perches in its favoured wet-marsh habitat. This furnariid is a shy and retiring resident of fresh and brackish marshes in the pampas region of Argentina, Uruguay and southern Brazil, where it particularly favours wet beds of *Eryngium* and *Scirpus*. Because of its relatively small range and its dependence on wetlands, this species is currently listed by BirdLife International as Near-threatened. Potential threats include land drainage and a lowering of the water table caused by plantation development in and around wetlands within its range.

[*Spartonoica maluroides*,  
Salado's Depression,  
Buenos Aires, Argentina.  
Photo: Yves Bilat]



the two probably differ from each other as much as do the members of some other pairs of cinclodes traditionally treated as separate species, such as the Surf and the Seaside Cinclodes.

A particularly interesting case involves the cinclodes of isolated mountain ranges in western Argentina, where two species, the Cordoba Cinclodes (*Cinclodes comechingonus*) and Olrog's Cinclodes (*Cinclodes olrogi*), occur sympatrically, yet both have been considered to be no more than subspecies of the widespread Bar-winged Cinclodes (*Cinclodes fuscus*). Other workers, however, regard Olrog's Cinclodes as a subspecies of the Grey-flanked Cinclodes (*Cinclodes oustaleti*). As pointed out by one of the original describers, Olrog's Cinclodes is remarkably similar in appearance to the races *riojanus* and *yzurietae* of the Bar-winged Cinclodes. Regardless of taxonomic ranking, it remains a mystery whether the mountains of Córdoba and San Luis have been colonized by two species of cinclodes, each then differentiating into a geographical isolate, or twice by the same species, each time producing a single isolate.

Lineages within the Furnariidae show a pronounced tendency to produce geographically isolated and phenotypically differentiated populations. This is perhaps best typified by the *Cranioleuca antisimensis-baroni* complex, which provides one of the most intriguing and dramatic examples of inter-population variation to be found among Neotropical birds. This variability includes, between the extremes of the complex, a difference in body mass of nearly 100% and plumage differences substantially greater than are found among many closely related congeners. Comparison of the small, richly coloured nominate *antisimensis* of lowland west Ecuador, weighing 15 g, with the large, darker and more contrastingly patterned 30-g *baroni* of high elevations in central Peru naturally leads one to conclude that two very different species are involved; these forms, however, grade into one another in a stepwise clinal manner, and it is uncertain where to draw the line between populations assigned to one or the other "species". Populations currently treated under Baron's Spinetail at its northern extreme are more similar in size, pattern and colour to the subspecies *palamblae* of the Line-cheeked Spinetail than they are to the south-eastern populations, such as the race *capitalis*, of Baron's Spinetail. Each specimen locality seems to represent a diagnosable population, and a thorough, quantitative analysis that includes plumage, morphometrics, vocalizations and genetics will

surely produce a landmark study of geographical differentiation and speciation.

Another group in desperate need of an in-depth study is the *Asthenes wyatti-punensis* complex, which extends from the Santa Marta Mountains and northern Andes, in north Colombia, south-



The song of the **Grey-throated Leaf-tosser**, like that of its five congeners, is very uncharacteristic among the ovenbirds. It consists of pleasant whistled refrains which lack the harsh, grating qualities typical of the rest of the family. The leaf-tossers show no close affinities with any other genus except, perhaps, the monotypic Sharp-tailed Streamcreeper genus (*Lochmias*), with which they share some similarities, all of which may simply reflect convergence. Leaf-tossers are so called because of their foraging method, which involves flicking aside leaves with the bill as they seek prey on the forest floor. Unusually for a largely terrestrial furnariid genus, some species appear to press the tail against the ground when feeding or against a tree trunk when alarmed, and their stiffened tail feathers are presumably related to this behaviour.

[*Sclerurus albigularis*  
*canigularis*,  
Monteverde Forest  
Reserve, Costa Rica.  
Photo: Kevin J. Zimmer]





When proclaiming its territory, the male **Araucaria Tit-spinetail** delivers its high-pitched, excited trills from the plant on which this ovenbird is totally dependent. This is an extreme habitat specialist, occurring only in *Araucaria angustifolia* trees, whether those in forests or single trees in clearings and gardens. As the distribution of *Araucaria* is restricted to the Atlantic Forest of south-east Brazil and north-east Argentina, the *Araucaria Tit-spinetail* is also confined to that region. It feeds acrobatically, either singly or in pairs, at middle and canopy levels. Because it differs from others in the genus *Leptasthenura* in bill and tail shapes and certain plumage features, it has in the past been placed in a separate, monotypic genus.

[*Leptasthenura setaria*, Campos do Jordão, São Paulo, Brazil. Photo: Edson Endrigo]

wards to northern Argentina in a series of mostly discrete populations that show pronounced geographical variation in plumage and, perhaps, voice. The form *punensis*, although currently treated as a subspecies of the Puna Canastero (*Asthenes sclateri*), has often been considered to form a separate species along with the two races *cuchacanchae* and *lilloi*. Alternatively, these same three taxa have in the past been treated as conspecific with the Austral Canastero (*Asthenes anthoides*). Similarly, the southern subspecies *azuay* and *graminicola* of the Streak-backed Canastero (*Asthenes wyatti*) were once treated as separate species, and they may, indeed, be more closely related to the Puna Canastero than to other taxa currently included in *A. wyatti*. The Streak-backed and the Puna Canasteros are considered to be sister-species, but, because they appear to intergrade in the region of Lake Titicaca, on the Peru-Bolivia border, it may be better to regard them as conspecific. Historically, interpretations of species limits in this group have fluctuated more than is the case for any other species complex in the family.

Another complex awaiting a thorough study is the *Schizoeaca* thistletails of the timber-line ecotone of the Andes. Some authors unite all members of the genus in a single species, whereas others prefer to rank the major taxa as full species. The vocalizations of all thistletails seem to be fairly similar, but the plumage patterns differ to an extent that is not found within other species-level taxa in the Furnariidae. The various thistletail taxa comprise a series of allopatric, mountain-top replacements; when major units are treated as full species, they form a classic superspecies. This lineage illustrates three themes in geographical variation of birds of the Andes: the tendencies to form leap-frog patterns of colour variation, with similar-looking taxa separated geographically by less similar-looking ones, to show latitudinal size variation that is the opposite of Bergmann's rule, and to have the most rufescent populations at the latitudinal extremes. The situation can be illustrated by the case of the White-chinned Thistletail (*Schizoeaca fuliginosa*), which is almost certainly paraphyletic with respect to the Mouse-coloured Thistletail (*Schizoeaca griseomurina*), the distribution of which it brackets to the north and south. The Mouse-coloured Thistletail is probably more closely related to a parapatric subspecies, probably the nominate race, of the White-chinned Thistletail than are the latter's northern and southern groups to each other. Perhaps a reflection of

this relationship is that the Mouse-coloured and the nominate race of the White-chinned share a plumage feature, a white eyering, that is not found in the two southern races of the latter.

With over 600 described subspecies in the Furnariidae, a rigorous re-evaluation of the diagnosability of these named taxa is a daunting task, one requiring a major scientific treatise. For cur-



Normally skulking in the dense, emergent vegetation of wet marshes, the **Curve-billed Reedhaunter** is most easily observed when singing. Males deliver a rapid series of harsh notes that ascend and then descend in pitch, before fading at the climax. The reedhaunter feeds by gleaning vegetation and takes a variety of arthropods, including ants, orthopterans and beetles. The nest consists of a ball of woven grass, leaves and fibrous material, lined with soft plant material, and attached to, or supported by, emergent vegetation. Access is via a side entrance equipped with a woven "awning", an architectural feature found in the nests of only two other ovenbird species.

[*Limnornis curvirostris*, Otamendi Reserve, Buenos Aires, Argentina. Photo: José & Adriana Calo]



This **Buff-breasted Earthcreeper** has seized a large, winged insect. The long, decurved bill of this species is used for probing and excavating in bare earth and turf for invertebrate prey, and also for gleaning food directly from the surface.

Recorded prey items of this furnariid include beetles, flies and springtails (Collembola).

Considering the large number of species in the family, the ovenbirds have remarkably narrow dietary preferences, these being almost wholly restricted to invertebrates, mainly arthropods. Commonly taken insects include cockroaches, beetles, grasshoppers and crickets, and the caterpillars of moths and butterflies. Ovenbirds are "substrate-oriented" foragers, and many specialize in searching very specific substrates for hidden and cryptic invertebrates. The Buff-breasted Earthcreeper is found in high-elevation puna grassland in the Andes of southern Bolivia and north-west Argentina.

As depicted here, it favours areas with dry, ephemeral watercourses and ravines, scattered grass and patches of bare earth. It nests at the end of a tunnel about a metre long excavated into a bank, or in a crevice in rocks. The tunnel leads to a nest-chamber that has a pad of grasses on which the two eggs are laid. As is the case for many of the high-elevation grassland birds in South America, there are comparatively few anthropogenic threats, except perhaps overgrazing. The Buff-breasted Earthcreeper is consequently fairly common, at least locally.

[*Upucerthia validirostris*  
validirostris,  
El Infiernillo,  
Tucumán, Argentina.  
Photo: José & Adriana Calo]







This **White-eyed Foliage-gleaner** has captured a snail deep in the forest understorey. This species, together with a number of other furnariids inhabiting humid forest, specializes in searching dead leaves and debris, a striking example of the "substrate specificity" that is frequently exhibited by members of the family. Dead-leaf micro-habitats have been shown to be exceptionally rich in invertebrates when compared with green foliage; this is because, during the day, they shelter a wide range of largely nocturnal arthropods.

[*Automolus leucophthalmus sulphurascens*, Minas Gerais, Brazil. Photo: Anita Studer]

rent purposes, therefore, it is considered best to rely on existing descriptions and literature as the main method of evaluation. Other than the addition of newly described subspecies, the 1951 classification of Peters has been largely maintained herein, unless published revisions have indicated otherwise. In some cases, however, subspecies recognized by Peters or others have been synonymized with other taxa in the current classification. Detailed examination of museum material, including that in the extensive collections at the Museum of Natural Science, Louisiana State University, in the USA, has revealed that, in these instances, the characters that supposedly allow diagnosis clearly fail to do so. Just one of many examples illustrating the complexity of such problems is provided by the Bar-winged Cinclodes. In this case, it is unclear whether the forms *rivularis* and *longipennis*, both described in the nineteenth century, are valid races. It is possible that the whiter individuals from the drier areas of the Peruvian Andes are the "true" representatives of the subspecies *albiventris*, leaving at least one of the other names, presumably *longipennis*, available for humid-slope birds. The form *rivularis*, of the Junín region of Peru, is supposed to differ from *longipennis* in having a less rufescent back, paler flanks, and less heavily margined breast feathers; although this does, indeed, apply to some specimens from the Junín region, the type locality for *rivularis* is Maraynioc, at or near the humid eastern slope.

Although many subspecies were described from inadequate samples of specimens and localities, and before the word "statistics" had even entered the vocabulary of biologists, the "benefit of the doubt" has generally been accorded to named taxa when discrete differences are apparent, even if appropriate sampling of specimens from intermediate regions is lacking. In contrast to temperate latitudes, geographical variation in tropical birds, largely sedentary and more sensitive to barriers to gene flow, is often discrete and abrupt, with named entities an appropriate typology for cataloguing such variation. Nevertheless, it would be surprising if any modern subspecies typology, if rigorously analysed, survived without revision. For example, recent examination of specimens revealed at least four undescribed geographical populations, of the Dark-breasted (*Synallaxis albigularis*) and the Rufous Spinetails (*Synallaxis unirufa*), Baron's Spinetail and the Streak-throated Canastero (*Asthenes humilis*), that appear to merit subspecies rank. Other subspecies, as yet undescribed, have

been discovered by Fjeldså, Krabbe and others; these involve, for example, the Tawny Tit-spinetail (*Leptasthenura yanacensis*), the Puna Thistletail (*Schizoeaca helleri*), the Sooty-fronted Spinetail (*Synallaxis frontalis*), the Creamy-breasted Canastero, the Scribble-tailed Canastero (*Asthenes maculicauda*) and the Line-cheeked Spinetail.

The number of species in Furnariidae will undoubtedly increase in the coming decades as new species, and perhaps even further new genera, are discovered. The lesson from the astounding discovery of the Pink-legged Graveteiro (*Acrobatornis fonsecai*) should not be lost on field biologists or conservationists. Nests of this species are plainly visible from one of Brazil's major highways, and virtually every ornithologist who has worked in eastern Brazil over the last century has passed literally within sight of the bird, yet this furnariid, so different from any other that it clearly demanded the description of a new genus, remained undetected until 1994. In many ways, this is the most remarkable new bird species to have been discovered in the Western Hemisphere in the last 25 years. Almost as amazing is the fact that the Long-tailed Cinclodes (*Cinclodes pabsti*) remained undescribed until 1969; not only does southern Brazil have a long history of exploration by prominent ornithologists, but the cinclodes are typically among the most conspicuous ovenbirds and some of the easiest to find.

Furthermore, some other species of ovenbird are known from a single locality or a closely grouped set of localities, examples being the Orinoco Softtail, the Hoary-throated and Bolivian Spinetails and the Cipo Canastero (*Asthenes luizae*). Others again, such as the Russet-mantled Softtail, the Royal Cinclodes, the two *Xenerpestes* greytails and the Bolivian Recurvebill (*Simoxenops striatus*), occur at widely scattered localities, but only a few specimens of each are available. Strictly from a statistical sampling perspective, therefore, it is highly likely that additional species remain to be detected, especially when one considers how much of South America has still to be investigated thoroughly by competent field ornithologists.

Besides the Pink-legged Graveteiro and the Long-tailed Cinclodes, seven other furnariids new to science have been discovered since Meyer de Schauensee's classic 1970 inventory of South American birds. These are the Apurímac Spinetail (*Synallaxis courseni*), first described in 1971, the Vilcabamba (*Schizoeaca*



Searching for invertebrates in shallow running water is one foraging strategy of the **Grey-flanked**

**Cinclodes**. This species inhabits open grassy and rocky habitats, from sea-level to about 4000 m, in central and southern Chile and adjacent areas of Argentina. At higher elevations it appears to favour the vicinity of streams. It obtains its food by gleaning invertebrates from the surfaces of vegetation, bare earth and rocks. The genus in general is notably tied to wetland habitats and their margins. One exception is the **Cordoba Cinclodes**, pictured here (below) with a captured earthworm.

This species, which is confined to west-central Argentina, favours open grassy, often rocky, habitats in submontane areas. It, too, feeds by gleaning invertebrates from bare earth, vegetation and rocks, and its recorded food items include a range of arthropods, as well as some seeds. Although the majority of food items taken by ovenbirds consist of arthropods, the various species of cinclodes demonstrate that a range of other prey can be important to some genera.

Unusually among the Furnariidae, molluscs make up a high proportion of the prey of many *Cinclodes* species, especially those which specialize exclusively on marine intertidal habitats. Seeds and fruit have been recorded as food for a number of ovenbirds and may be an important part of the diet of some species. In addition, small vertebrates are taken by the members of several genera.

[Above: *Cinclodes oustaleti*, Chile.

Photo: Roland Seitre/Bios

Below: *Cinclodes comechingonus*, El Cóndor, Córdoba, Argentina.

Photo: Andy & Gill Swash]







In the harsh environment in which it lives, the **Blackish Cinclodes** has adapted to the conditions by using a diverse array of food resources. It frequents rocky and gravelly beaches on the islands and coastline of the southern tip of South America and the Falkland Islands. Its prey items include a range of arthropods and marine invertebrates, which it captures by employing a variety of foraging techniques. Strandline kelp debris and floating mats of kelp are important feeding areas and are carefully scrutinized for hidden prey; using the bill, the birds often hack into the rotting kelp to expose prey animals. As demonstrated in the lower photo, the Blackish Cinclodes is also frequently found in the vicinity of colonies of marine mammals and seabirds, where it chases invertebrates attracted to these sites and disturbed by the moving animals. It also searches seabird faeces and nests for invertebrate prey, and has been recorded as feeding on damaged eggs and on scraps of fish and other left-over food items brought to the chicks in seabird nests. The Blackish Cinclodes is an incredibly tame bird and will even follow humans as they walk along the beach, taking advantage of the invertebrates disturbed by the tramping feet. When chasing flying insects, it sometimes resorts to brief aerial sallies from the ground. Understandably for such a tame bird, it has suffered a marked reduction in its range following the introduction of ground predators such as rats and cats. As a result, this cinclodes is now very rare on the mainland and is absent from many of its former haunts.

[*Cinclodes antarcticus antarcticus*.]

Above: Carcass Island, Falkland Islands.

Below: Sea Lion Island, Falkland Islands.

[Photos: Tui de Roy]



*vilcabambae*) and Perija Thistletails (*Schizoeaca perijana*), described in 1972 and 1977, respectively, Olog's Cinclodes, described in 1979, the Alagoas Foliage-gleaner (*Philydor novaesi*), described in 1983, the Cipo Canastero, described in 1990, and, finally, the Bolivian Spinetail, described in 1997.

### Morphological Aspects

Although Furnariidae is one of the most diverse families in the world in terms of bill and tail morphology (see below), its members share a general outward appearance that typifies the ovenbirds. The mostly brown plumage, the constant pattern themes such as prominent streaks, throat patches, a long and often graduated or "spiny" tail, wingbands and tail patches that show in flight, combined with unmusical and often harsh voices, usually wary or sneaky behaviour, and often moderately to strongly acrobatic perching behaviour and clambering locomotion along branches, with consequently oversized feet, all signal "ovenbird" to the ornithologist.

Ovenbirds range in size from the tiny Slender-billed Xenops, only 10 cm in total length, to the Brown Cachalote (*Pseudoseisura lophotes*) and the Flammulated Treehunter (*Thripadectes flammulatus*), both some 25 cm long. The lightest in weight are about 8 g, as in some *Leptasthenura* species, whereas the heaviest is the 109-g White-bellied Cinclodes (*Cinclodes palliatus*).

The overwhelming majority of furnariids are basically brown in colour, perhaps to a greater degree than is evident in any other of the world's major bird families. Although the Blackish Cinclodes (*Cinclodes antarcticus*) comes close, not one species is all black, which is rather unusual for such a large family, especially in the suboscines. Only a single species, the White-bellied Cinclodes, is truly all white in a substantial portion of its plumage, and in only four species is the predominant colour something other than a shade of brown. The two *Xenerpestes* greytails, as well as the recently discovered Pink-legged Graveteiro, are predominantly grey, with some black, whereas the Orange-fronted Plushcrown is mostly greenish and yellowish. This last is the only furnariid with any bright coloration of this sort, and, in fact, the plushcrown's uniqueness within the family in terms of colour once led some to doubt whether it was a true member of the

Furnariidae. That all four of these "oddly" coloured ovenbirds are somewhat local or rare suggests that these evolutionary "experiments" in coloration have not been particularly successful. Whether they are recent phenomena or relicts of an ancient but now extinct furnariid radiation is not known.

Yellow is the only bright spectral colour found in ovenbird plumage, albeit rarely. In addition to the Orange-fronted Plushcrown, which has a yellow-orange forehead and a yellow throat, four other species have small patches of yellow on the throat. These are the Chotoy Spinetail (*Schoeniophylax phryganophilus*), the Sulphur-throated Spinetail (*Cranioleuca sulphurifera*), the Yellow-chinned Spinetail and the Pearled Treerunner. Others, such as the Speckled Spinetail (*Cranioleuca gutturata*) and the Rufous-tailed Foliage-gleaner (*Philydor ruficaudatum*), approach the condition of having pure yellow in the plumage.

Within the broad colour "brown", however, the Furnariidae show an unparalleled diversity of shades, at their extremes flirting with red, orange, yellow and black. Some of the shades of chestnut, rufous and ochraceous are so intensely bright that they appear almost to glow, like spectral colours. At the other extremes, many species of arid areas are so dull in coloration that to call them either greyish-brown or brownish is a generous stretch of the limits of these colours.

Compensating to a degree for lack of bright colours, many ovenbirds have complex plumage patterns that make them comparatively attractive. Many of the spots and stripes that contribute to these patterns are emphasized by contrasting margination of the feathers so marked, making them stunning. Species such as the Pearled Treerunner, the Point-tailed Palmcreeper and the Flammulated Treehunter display some of the most striking plumage patterns among Neotropical birds. Many furnariids also have conspicuous, contrasting patches of paler colour in the tail and wings that are revealed in flight. In spite of the conspicuous wingbands found in several genera, the family as a whole is notable for the near absence of prominent wingbars.

Although the display repertoires of ovenbirds are poorly documented, plumage patterns are clearly emphasized during display in some genera. The semi-concealed throat patch of many *Synallaxis* spinetails and *Asthenes* canasteros is revealed during displays, when the throat feathers are erected to expose their darker bases. The cinclodes raise their wings while singing, exposing

The stout bill of this **Streak-capped Treehunter** was more than a match for a comparatively large Anolis lizard. The feeding habits of this furtive, understorey furnariid are poorly known, and vertebrates had not previously been confirmed as part of its diet. Other members of the genus *Thripadectes*, however, are known to take vertebrates, mainly frogs, lizards and salamanders. These supplement a diet of what are more typical prey of furnariids, such as molluscs, beetles, cockroaches, katydids, spiders and caterpillars. The Streak-capped Treehunter occurs in the montane forest of north Venezuela and the Andes, southwards to northern Ecuador.



[*Thripadectes virgaticeps*  
*virgaticeps*,  
Carchi, Ecuador.  
Photo: Doug Wechsler/  
VIREO]





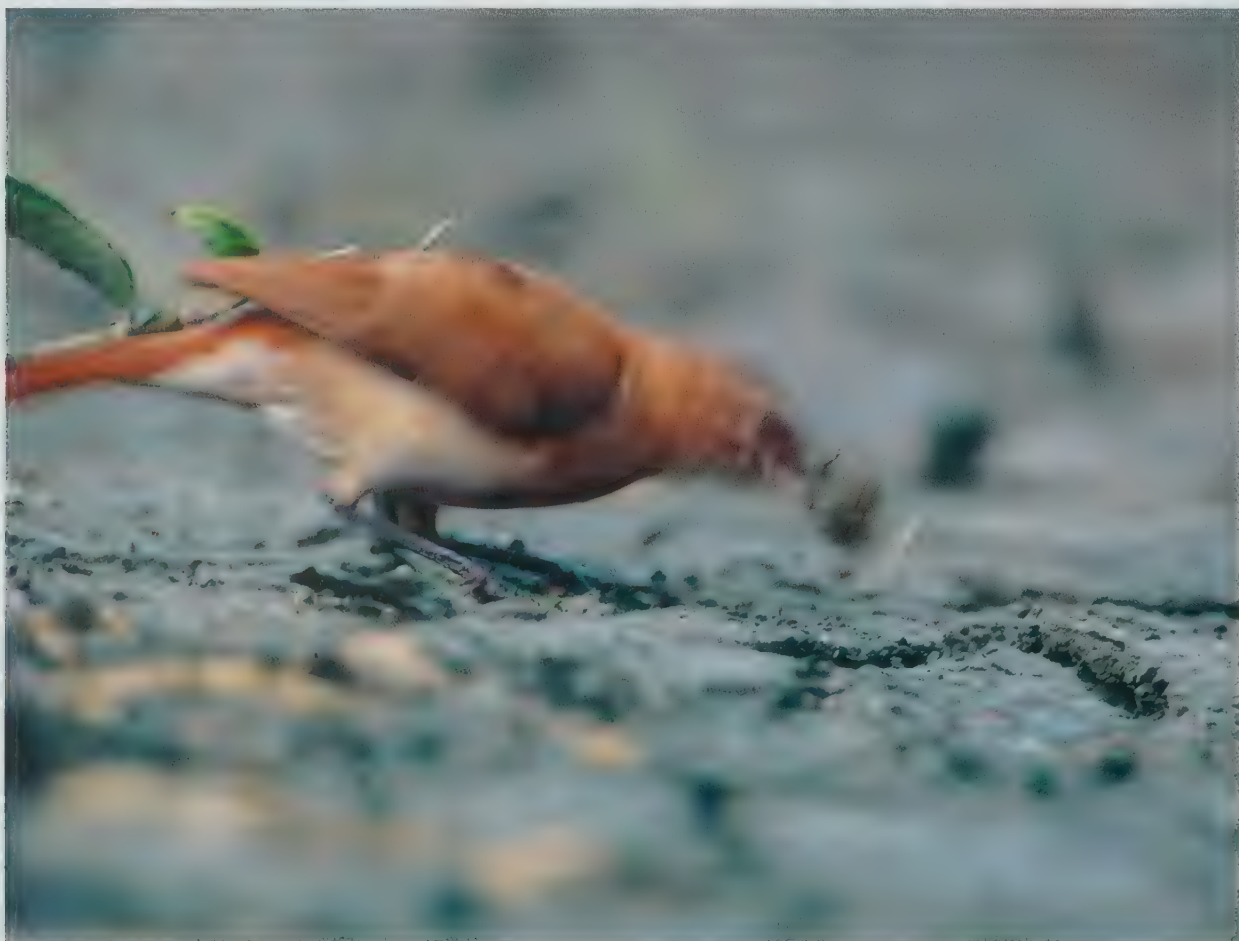
A rather catholic taste in invertebrate prey is exhibited by the thrush-like **Rufous Hornero**, an individual of which is here portrayed as it captures and dispatches a freshwater crab.

This species forages while strutting around with a characteristic "high-stepping" gait, and gleans invertebrates and seeds from areas of bare earth and leaf litter. The varied diet of this large hornero is well studied compared with that of many ovenbirds and appears to include good numbers of ants, which is unusual among passerines.

Other recorded prey items include beetles, termites, crickets, mole-crickets, caterpillars, grasshoppers, hemipteran bugs, worms, spiders and snails.

The Rufous Hornero has a huge range that covers much of lowland southern South America, where it is found in open second growth, farmland, pasture and urban parks and gardens. It favours areas with disturbed, bare soil and is especially numerous near human habitations. It is a well-known and popular species throughout its range, and has even been designated the national bird of Argentina. Its preference for open, often anthropogenic habitats, coupled with the widespread deforestation of South America in historical times, has enabled this furnariid to expand its range dramatically in recent decades.

[*Furnarius rufus paraguayae*,  
Rio Pilcomayo  
National Park,  
Formosa, Argentina.  
Photos: José & Adriana  
Calo]





The distinctive **Sharp-tailed Streamcreeper** is often encountered as it stands in shallow running water, seeking invertebrates on the beds of streams and small rivers. This individual has taken a small larva or worm. The streamcreeper also gleans items from moss-covered rocks in the streambed and from bare mud and leaf litter along riparian corridors. It is unusual in being the only burrow-nesting ovenbird that builds a small domed nest of plant material at the end of the tunnel. Although the genus is monotypic, this species has several disjunct populations: in northern Venezuela, the Andes, and eastern Paraguay, south-east Brazil, north-east Argentina and Uruguay. It may be that these represent more than one species.

[*Lochmias nematura*,  
Caraça National Park,  
Minas Gerais, Brazil.  
Photo: Kevin Schafer]



prominent wingstripes. Species in several genera have erectile crown feathers that also seem to be emphasized during displays (see General Habits), as demonstrated by, for example, the Crested Hornero (*Furnarius cristatus*), the Sulphur-throated Spinetail, the Lark-like Brushrunner and the Brown Cachalote. Others, including the Tufted (*Leptasthenura platensis*) and Araucaria Tit-spinetails (*Leptasthenura setaria*) and the Crested Spinetail (*Cranioleuca suberistata*), have slightly elongated crown feathers that are possibly also used during display.

The Furnariidae exhibit a wide range of bill shapes, probably the largest of any Neotropical family. The typical insectivore bill shape is by far the most common, and it is the only or the predominant one in several of the large genera, such as *Geositta*, *Cinclodes*, *Leptasthenura*, *Cranioleuca*, *Synallaxis*, *Asthenes*, *Philydor* and *Automolus*. A longer, relatively thinner bill is associated with the probing of substrates, and is found in such genera as, for instance, *Upucerthia* and *Sclerurus*. A decurved bill, associated with probing and digging, is possessed by some species, including the Slender-billed Miner (*Geositta tenuirostris*), several *Upucerthia* earthcreepers and the Stout-billed and Royal Cinclodes. A different type of bill, wedge-shaped or chisel-shaped bill, with the distal portion of the maxilla distinctly upturned, and with the mandibles laterally compressed in some cases, is well represented in the family, being possessed by, for example, *Simoxenops*, *Megaxenops*, most *Xenops*, *Pygarrhichas* and, to a lesser degree, *Syndactyla* and *Anabazenops*. This bill shape is usually associated with chiselling motions used to remove material from substrates or to enlarge existing cracks.

With the exception of a few families including the pheasants and partridges (Phasianidae) and the birds-of-paradise (Paradisaeidae), in which the tail is used prominently in display, perhaps no other avian family shows so much variation in tail shape as does Furnariidae. This is reflected in the English names of many groups, such as wiretail, thistletail, spinetail, softtail, prickletail and barbtail, as well as in many scientific names: *Aphrastura* means "strange tail", *Leptasthenura* "thin weak tail" and *Sclerurus* "stiff tail", and *Pygarrhichas* can be translated as "rump with a basket". Much of the variation in tail structure is associated with varying uses of the tail as a brace during foraging. At one extreme is the tail of the truly scansorial, climbing, species such as the White-throated Treerunner and the *Margarornis* treerunners,

in which the rachis of some rectrices is stiffened throughout its length, with the distal ends of the shafts downcurved and devoid of barbs; the tail is used as a brace during climbing. A virtual continuum exists from this extreme to the typical passerine tail, which lacks such modifications, with dozens of species in such genera as *Cranioleuca*, *Berlepschia*, *Pseudocolaptes* and *Cichlocolaptes* showing some degree of strengthening of the tail for clinging or acrobatic manoeuvring. Although modifications of the tail are in general good predictors of climbing ability in the Furnariidae, there are three genera in which a stiffened tail or the possession of tail spines is not clearly associated with such foraging behaviour. The leaflossers, in *Sclerurus*, have stiffened rectrix shafts, but these birds are strictly terrestrial in their foraging; nevertheless, several observers have noted that, when flushed, they cling vertically to trees and branches, and Whitney has found that they roost in this position at the bases of trees. Unlike *Sclerurus*, the Sharp-tailed Streamcreeper has protruding tail "spines", but the rectrix shafts are not so strong as those of the leaflossers. Perhaps the streamcreeper, too, will eventually be found to cling occasionally to vertical trunks, or possibly rocks. Most mysterious are the cachalotes in the genus *Pseudoseisura*, which have both slightly stiffened rectrices and protruding terminal spines. To date, they have not been reported as using the tail in any way as a brace; indeed, their foraging behaviour indicates that they are among the least likely in the family to do so.

Many ovenbirds have a disproportionately long tail, as is evident in such species as Des Murs's Wiretail, many *Schizoeaca* thistletails, *Leptasthenura* tit-spinetails and *Synallaxis* spinetails. These have what is, in relation to body size, some of the longest tails of any bird in the world, at least if one disregards those species, such as many pheasants, hummingbirds, birds-of-paradise, whydahs (*Vidua*) and others, in which the tail is known to function as an ornament during display. Many of the longer-tailed furnariids also have somewhat "decomposed" vanes, especially distally, where gaps between the barbs are unusually large. At the other extreme, a few ovenbirds have a disproportionately short tail, examples being the Campo Miner and some xenops.

The Furnariidae are fairly homogeneous with regard to wing shape. Most have relatively short, rounded to somewhat pointed wings that reflect their generally sedentary status and the absence of aerial foraging. Sedentary species inhabiting dense vegeta-



tion, such as members of the genera *Synallaxis*, *Certhiaxis*, *Schizoeaca* and *Thripadectes*, tend to have the most rounded wings, with a minimum of primary extension. Some terrestrial foragers are also represented at this extreme, among them species in *Sclerurus* and *Upucerthia*, although not the migratory Scale-throated Earthcreeper (*Upucerthia dumetaria*). Those furnariids that, although sedentary, fly frequently between foraging sites tend to have somewhat longer, more pointed wings, this being the case for species in *Leptasthenura*, *Cranioleuca*, *Margarornis*, *Pseudocolaptes*, *Philydor* and *Xenops*. The only ovenbirds with long wings and large primary extensions are the miners and the cinclodes, all of which typically make long flights between foraging sites, and several of which are migratory. It is also of relevance that many, perhaps all, miners give song-flight displays, and short aerial displays have been reported for three species of cinclodes.

Although comparative quantitative data are not available, ovenbirds strike most field observers as having oversized legs and feet in terms of thickness. This is presumably associated with the high frequency of acrobatic manoeuvres requiring stronger grasping power, which is evident during foraging. Possibly as a consequence, many furnariids use their feet to hold large prey items while they kill and eat them.

The morphological radiation of the Furnariidae has generated many cases of what are widely regarded as examples of convergent evolution, involving taxa that are similar in morphology and ecology to taxa in other, often distantly related, bird families. This convergence is often reflected in the English and scientific names. Although rigorous quantitative evaluation of the proposed examples of convergence is lacking, many of these are striking, at least superficially. One of the most remarkable is the aptly named Wren-like Rushbird, which is amazingly similar in plumage, morphology, behaviour and habitat to the Marsh Wren (*Cistothorus palustris*) of the family Troglodytidae. The harsh mechanical nature of some of its notes and its high rate of song delivery also suggest bioacoustic convergence. Indeed, a comparison of the vocal repertoires of these two would make a fascinating study; the suboscine rushbird would be predicted to have a drastically limited repertoire compared with the astounding individual repertoires documented for the Marsh Wren by D. E. Kroodsma. The marsh-inhabiting Curve-billed Reedhaunter is

remarkably similar in plumage and behaviour to some Old World marsh-dwelling *Acrocephalus* warblers. Similarly, the curve-billed members of the genus *Upucerthia* bear a reasonable resemblance to several thrashers (*Toxostoma*) of the family Mimidae, and both groups inhabit arid scrub. The White-throated Treerunner is widely considered to be partially convergent with the large *Sitta* nuthatches in plumage and behaviour, but its fortified, bark-bracing tail differs from that of the nuthatches. Tit-spinetails have long been considered convergent in morphology and behaviour with the Old World *Aegithalos* long-tailed tits; this is reflected in their English name, as well as in the scientific name of one, the Plain-mantled Tit-spinetail (*Leptasthenura aegithaloides*).

Less convincing examples of convergence mentioned by various authors include the general similarities between the miners and some larks (Alaudidae) or wheatears (*Oenanthe*), between some canasteros and the *Anthus* pipits, and between the cachalotes and the jays of the Corvidae family. The similarities to birds living elsewhere in the world are often alluded to in the scientific names of the genera, with appropriateness ranging from good to not so good. *Cinclodes*, meaning "like a dipper (*Cinclus*)", and *Certhiaxis*, or "treecreeper (*Certhia*)-spinetail", are fitting enough, whereas it is less easy to accept, for example, *Geositta*, *Upucerthia*, *Pseudocolaptes*, *Cichlocolaptes*, *Anabacerthia* and *Pseudoseisura*, which mean, respectively, "earth nuthatch", "hoopoe (*Upupa*)-treecreeper", "false woodpecker", "thrushy woodpecker", "climbing treecreeper" and "false wagtail (Motacillidae)".

The Furnariidae are notable for their lack of sexual dichromatism. No species shows a strong difference in plumage between the sexes, but a few exhibit subtle differences. Females of the Wren-like Rushbird, the Ruddy Spinetail (*Synallaxis rutilans*), the Chestnut-throated Spinetail (*Synallaxis cherriei*) and, perhaps, the Plain Softtail are slightly paler than their respective males. The general absence of sexual dichromatism in the family is consistent with the widespread suspicion, despite limited data, that differences in the sexes' roles during breeding are minimal and that variations from strict monogamy are few.

In terms of size, sexual dimorphism is slight. For virtually all species for which samples are sufficient, males average slightly larger than females in linear measurements. K. Winker and col-



**This Hudson's Canastero** is busy feeding its chicks and has caught a grasshopper (*Leptysma argentina*). This secretive ovenbird inhabits tall grass and sedges in and around marshes in the pampas region of eastern Argentina and Uruguay. It has been recorded as feeding also on caterpillars, beetles, pentatomid bugs and Hymenoptera. There is little information on the foraging techniques employed by this species but, like other canasteros, it presumably gleans arthropods from the ground, vegetation and the bases of sedge and grass tussocks. The nest is either a simple hollow beneath a clump or tussock of vegetation, and with a woven dome of grass and thin twigs, or a spherical woven mass slightly off the ground in a grass clump.

[*Asthenes hudsoni*, Argentina.  
Photo: Yves Bilat/Ardea]



Food items such as this juicy caterpillar will make an ideal offering for the chicks of the **Bay-capped Wren-spinetail**.

This furnariid gleans invertebrates from marsh vegetation, and has been recorded as taking a variety of arthropods such as beetles, Neuroptera and Hymenoptera. The well-hidden nest is a deep cup of grass and reeds, placed low down, or on the ground itself, and protected from above by dense vegetation.

This ovenbird is similar in size and shape to many of the other "spinetails", but its plumage is distinctive.

It occupies a monotypic genus, although it has in the past been placed within the *Synallaxis* spinetails, and some authors have postulated that it demonstrates affinities with the *canasteros* (*Asthenes*) and the tit-spinetails (*Leptasthenura*). The Bay-capped Wren-spinetail is just one of the many ovenbirds that have a direct association with wetland habitats.

A high proportion of the family is found in such habitats, ranging from the rocky, intertidal marine zones to the remote bogs of the high Andes.

Aside from those furnariids that, like the Bay-capped Wren-spinetail, frequent freshwater marshes with abundant emergent vegetation,

there are also the *Cinclodes* species, most of which are found at the water's edge in a variety of different habitats, the riparian *Certhiaxis* spinetails, and a stream-haunting specialist, the Sharp-tailed Streamcreeper (*Lochmias nematura*).

[*Spartonoica maluroides*, Salado's Depression, Buenos Aires, Argentina.  
Photo: Yves Bilat]







These two species of leaftosser are both bringing large prey items with which to feed chicks in the nest. The **Grey-throated Leaftosser** in the upper photo has caught a large orthopteran, whereas the **Rufous-breasted Leaftosser**, depicted below it, is carrying a big spider in its bill. The six leaftosser species are similar in their habitat requirements, and all have a specialized feeding technique. They occur in damp areas of humid and montane forest in Middle and South America, where they tend to be a scarce component of the avifauna and are usually encountered singly or in pairs. Leaf tossers feed by gleaning, probing moist soil, leaf litter and rotten wood, and flaking apart deep leaf litter by vigorously flicking it aside to expose prey. It is this last activity that gives these birds their vernacular name. While foraging energetically in this manner, they often press the tips of the tail feathers, the shafts of which are stiffened, into the ground. The recorded diet of the genus includes termites, cockroaches, beetles, annelid worms, ants, spiders and small frogs. The tackling of large items, incidentally, is not unusual in the ovenbird family, many members of which are notable among passerines for using their feet as a means of helping to subdue and dispatch prey. The degree of substrate specialization displayed by the leaf tossers is just one example in a family in which such specialization is commonplace. The variety of substrates utilized by various furnariids includes, among others, tree branches and trunks, live foliage, hanging dead leaves, epiphytes, fallen logs, bamboo stems and bare ground.

[Above: *Sclerurus albigularis albigularis*, Trinidad.  
Photo: M. D. England/  
Ardea

Below: *Sclerurus scansor scansor*, Cantareira, São Paulo, Brazil.  
Photo: Edson Endrigo]



Like many species in its genus, the **Cordilleran Canastero** forages by gleaning a variety of arthropods from the ground and, occasionally, from low vegetation. This foraging behaviour reflects the habitat preferences of the majority of the canasteros, which occur mainly in open and semi-open habitats with rocky or grassy terrain. Prey taken by this species includes ants, cockroaches and beetles. Foraging techniques adopted by some of the other canastero species include acrobatic, arboreal gleaning in low vegetation, as well as searching and even burrowing into tussocks, and occasional sallying after aerial insects or flying up to grab insects from low vegetation. The Cordilleran Canastero occurs in a variety of grassland and scrub habitats, from sea-level to 4500 m, ranging from Peru southwards to southern Argentina. Although it shows a strong preference for grassland, it can also be found in dry montane scrub, *Polylepis* thickets and open woodland.

[*Asthenes modesta australis*,  
Cabo dos Bahías,  
Camarones, Argentina.  
Photos: Xavier Ferrer &  
Adolf de Sostoa]



leagues have presented the most sophisticated analyses of sexual dimorphism for any members of the family. For the Buff-throated Foliage-gleaner, they found that males had significantly longer wings, tail and tarsi, but that the difference in bill length was not statistically significant. Males of the Plain Xenops had significantly longer wings and tails than those of the females, but the differences in bill and tarsus lengths were not significant. Perusal of Vaurie's extensive tables of measurements suggests that these trends, with the sexes exhibiting the greatest differences in wing and tail lengths and the least in bill length, should be almost universal within the family. The sole exception to the above pattern is the tuftedcheeks, the females of which have a considerably longer bill than that of the males, the degree of sexual dimorphism varying geographically. In the Streaked Tuftedcheek, the difference is so great that individuals can be sexed by sight in the field. Because of this, and the fact that the foraging behaviour of the two tuftedcheeks is amenable to visual studies, the study by S. Sillett and colleagues has set the stage for a fascinating research project with *Pseudocolaptes* for somebody interested in the underlying causes of sexual dimorphism.

Distinct juvenile plumages are found in many species of furnariid. Precise plumage sequences have yet to be worked out rigorously, and in many genera the skull never fully ossifies, thereby complicating the determination of age of individuals. Generalizations are, therefore, premature and synthesis impossi-

ble. In many cases, attribution of a plumage to the category of "juvenile" is based on assumption, and all such designations should be treated with caution. Nevertheless, it seems that the majority of ovenbirds possess a juvenile plumage that differs moderately to strongly from the adult plumage. Its scarcity in specimen series of most species suggests that its duration may be only several months or less. Most juvenile plumages are characterized by one or more of three themes. These are an ochraceous wash on the underparts, an increase in dusky feather margins that produces a scaly appearance, usually on the throat and breast, and an absence of, or reduction in, the contrasting throat or crown patches that characterize adult plumage. The taxonomic distribution and phylogenetic implications of these themes is in need of analysis. So far, there is no documented example of an ovenbird species breeding in any sort of juvenile or immature plumage.

For no species in the family have the timing and sequence of moults been elucidated. Nothing, however, suggests that the Furnariidae are unusual in these respects. The degree of overlap, or lack of it, between timing of breeding and moult has not been quantified in detail for any species. Moults that produce seasonal changes in plumage types are unknown.

Just as with the plumage, the Furnariidae are relatively dull and homogeneous with respect to the coloration of the irides, bill, tarsi and toes. Analysis of bare-part coloration among the ovenbirds, as for most birds, is limited by the absence of a feasi-





In characteristic posture, this **Wren-like Rushbird** intently forages for invertebrates on a mat of floating vegetation. This unusual furnariid gleanes items from vegetation, and occasionally from bare mud and water, in fresh and brackish marshes with abundant emergent vegetation (especially *Scirpus*). The rushbird provides the most striking example of convergence. In plumage, morphology, behaviour and habitat and, to some extent, vocally, it is remarkably similar to the Marsh Wren (*Cistothorus palustris*) of North America. It occupies a monotypic genus of uncertain affinities, but its nest architecture points to a possible relationship with the two reedhaunters (*Limnornis*, *Limnornites*).

[*Phleocyptus melanops melanops*,  
El Palenque,  
Buenos Aires, Argentina.  
Photo: Andy & Gill Swash]

ble, quantitative scoring methodology. Much or most of the variation evident from specimen labels is probably due to differences in preparators' scoring techniques, to light conditions at the time of scoring, and to varying degrees of post-mortem change. With these problems in mind, the following generalizations are possible. The vast majority of furnariids have brown or dark brown irides, but some have reddish, chestnut or yellow irides. In some species, iris colour shows a puzzling range of variation among specimens that does not seem to be associated with sex. Exam-

ples of this phenomenon include the Chotoy Spinetail, several *Synallaxis* and several *Cranioleuca* spinetails, the Yellow-chinned Spinetail, the Rufous-fronted (*Phacellodomus rufifrons*), Little, Streak-fronted and Freckle-breasted Thornbirds, the Equatorial Greytail (*Xenerpestes singularis*), the Brown-rumped Foliage-gleaner (*Automolus melanopezus*) and the Henna-hooded Foliage-gleaner (*Hylocryptus erythrocephalus*). The bills of most ovenbirds are typically dark, with the lower mandible often paler than the upper. The tarsi and toes are generally dull and rather



**Tufted Tit-spinetails** forage actively, and at times acrobatically, as they glean such items as beetle larvae and small spiders from foliage, slender branches and twigs. The individual portrayed here appears to be intently searching for prey among epiphytic lichens, and is obviously using its tail for support. The foraging technique of this species is typical of the members of this genus, which are largely arboreal, feeding at all levels from the understorey up to the canopy. Tit-spinetails usually occur in pairs or small groups, and are often found in mixed-species feeding flocks, even on occasion alongside other members of the genus.

[*Leptasthenura platensis*,  
Salado's Depression,  
Buenos Aires, Argentina.  
Photos: Yves Bilal]



When foraging, usually low down in the forest, the **Ruddy Foliage-gleaner** occasionally pecks and probes at decaying branches. Other techniques include gleaning from dead leaves and, at times, flicking through leaf litter in leaf-tosser (*Sclerurus*) fashion. As well as arthropods, it takes some small frogs and lizards. This ovenbird, found locally in the Middle American mountains, the Andean foothills and the Guianan Shield, appears to favour hill and lower montane forest, and may be tied to damp, densely vegetated ravines. The population in southern Venezuela, the Guianas and Amazonian Brazil, differing vocally and in size, probably represents a separate species.

[*Automolus rubiginosus nigricauda*,  
El Placer,  
Esmeraldas, Ecuador.  
Photo: Doug Wechsler/  
VIREO]



dark, usually some shade of olive, grey or brown, or black, paler shades of pinkish or yellowish being relatively scarce; tarsus colour tends to be homogeneous within a genus. The only two species with brightly coloured tarsi are the Orange-fronted Plushcrown, which has bright yellow or orange-yellow legs, and the Pink-legged Graveteiro, with bright pink legs. The presence of such bright coloration in these two members of a large family generally having dull tarsi is another character to suggest that they are closely related, if not sisters. Areas of bare facial or throat skin are not found in the Furnariidae.

Most ovenbirds use flight to move from one spot to another, generally flying only very short distances at a time. As mentioned above, this is reflected in their wings, which are typically relatively short, and rounded to modestly pointed. Exceptions include the miners and the cinclodes, all inhabiting open country, where long flights are frequently used to move from one foraging spot to another. At the other extreme, many species found in dense undergrowth are known for their weak, fluttering flight, and seldom fly more than a few metres at a time; the *Schizoeaca* thistletails and the *Synallaxis* spinetails are examples.

The number of furnariids that climb or hitch along or up branches is very high. Moreover, the number of species for which the characteristic motion is to climb vertical branches is probably higher in Furnariidae than in any family except those consisting almost exclusively of climbers, such as the woodpeckers, the nut-hatches (*Sittidae*), the treecreepers (*Certhiidae*) and, especially, the woodcreepers, the last of which is, in any case, probably better included within the Furnariidae as its most scansorial lineage (see Systematics). Even with the exclusion of the dendrocolaptids, the number of species with additional modifications for climbing, such as stiffened tail shafts, strong and bare tips of the rectrices, and strong toes, is exceptionally high. The use of various hanging manoeuvres when foraging is probably greater than in any other species-rich family of birds except the tits (*Paridae*). Many ovenbirds frequently hang downwards or even upside-down to reach the undersides of branches or suspended dead leaves.

Locomotion for those species that are mainly terrestrial naturally involves running, scuttling and walking to various degrees. Most terrestrial species move by means of short scuttling walks and runs, and some short hops. Hopping to the extent found in the thrushes, for example, is unknown. The only members of the

family that have a pronounced high-stepping walk are the horneros. The miners, the *Upucerthia* earthcreepers and the Lark-like Brushrunner can run fast for considerable distances, as also can horneros when frightened.

Finally, it is of interest to mention the peculiar musty odour emitted by at least some of the spinetails. This is sufficiently strong that a museum curator can tell immediately when the spinetail cabinet is open. The odour is similar to that given off by specimens of two tanagers (*Thraupidae*), the Black-capped (*Hemispingus atropileus*) and Orange-browed Hemispinguses (*Hemispingus calophrys*), and also, as noted by H. D. Pratt, by the Hawaiian honeycreepers (*Drepanididae*). It is rather faint and difficult to detect on individual specimens, and perhaps not easy to distinguish from odour secondarily acquired by spinetails through being housed with specimens that actually produce it. Presumably, the odour is derived from some component of the oil of the uropygial gland, but it is not known whether it has any function, such as ectoparasite repulsion.

## Habitat

It would be far easier to discuss the habitats not occupied by members of the Furnariidae, rather than those in which they do occur. In fact, every terrestrial habitat in South America that supports primary productivity also has at least one species of ovenbird. Furnariids are found from the highest elevations that support life in the Andes all the way down to lowland Amazonia, which harbours the world's richest bird communities. Their habitats range from perpetually wet cloudforest to virtually rainless desert, and also include river-island mudflats, coastal sand dunes, saltwater marshes, and even the rocky intertidal zone. In fact, the two ovenbirds living in the last-mentioned habitat, the Seaside Cinclodes and the Surf Cinclodes, may be the only passeriform species found only in a truly marine environment. Furnariids are also found in virtually all human-created habitats, from urban parks to degraded pastures.

Ovenbirds are prominent components of all bird communities in South America. The corollary of this extreme range in habitats occupied is that the furnariid lineage shows extreme flexibility in the limits of physiological tolerances, with several spe-





The boldly patterned and striking **Pearled Treerunner** is an acrobatic feeder, often hanging upside-down when searching for food. It creeps along branches, including the undersides, using its tail for support if necessary, and often ventures out to the slender terminal twigs of trees. The Pearled Treerunner lives in the Andes, from Venezuela to Bolivia, and favours the mossy, epiphyte-covered trees of high-elevation elfin forest. Here, it gleans arthropods directly from epiphytes and, occasionally, from bark and dead leaves. It tolerates mild habitat disturbance, and is a reasonably common furnariid throughout its range.

[*Margarornis squamiger perlatus*,  
Sierra Sabanilla,  
Zamora-Chinchipe,  
Ecuador.  
Photo: Doug Wechsler/  
VIREO]

cies living in some of the coldest, hottest, driest, wettest and saltiest habitats colonized by any species in the huge order of Passeriformes.

The highest number of syntopic furnariids occurs in lowland tropical forest. *Terra firme* forest in Amazonia usually has 10-17 syntopic species. Transitional forest in western Amazonia typically has 12-14, with a taxonomic composition similar to that of *terra firme*. Usually ten to twelve ovenbird species are found in the humid forests of lowland south-eastern Brazil. Central American lowland tropical forest, on the other hand, may harbour only three to six, reflecting the rapid northward decline in ovenbird diversity. In the Andes, lower montane forests at, say, 1500 m can support 10-15 syntopic furnariids, depending on latitude, and are thus as rich as lowland localities, whereas high-elevation cloudforest, at around 3000 m, may have only three to seven, again depending on latitude. Deciduous forests of central and southern Bolivia hold an average of five or six species of ovenbird. Although the species richness of ovenbirds is drier, colder or more open habitats of the Neotropics may not be so high as that in humid tropical forest, ovenbirds may form a much higher proportion of the avifauna in the former biotopes. F. Vuilleumier's 1985 compilation of the avifaunas of extreme southern South America indicates that *Nothofagus* forest, for example, may have only three species of furnariid, but these can represent more than 15% of the true forest species. In the Andes, rocky slopes with scrub or *puna* grassland may support no more than four to six ovenbird species, yet this total could represent 25% of the local avifauna.

Within the Furnariidae, many genera share patterns of habitat association, which in turn are related to biogeography. For example, *Geositta*, *Upucerthia*, *Cinclodes* and *Asthenes* are found primarily in open non-forested habitats of the high Andes and Patagonian regions, with a few species, such as the Campo Miner, the Long-tailed Cinclodes and the Cipo Canastero, representing minor "outposts" farther north-east in the subtropical southern lowlands. Similarly, although *Furnarius* and *Phacellodomus* are primarily lowland genera of semi-open habitats of tropical and subtropical southern South America, a few taxa live in similar habitats farther north-west, especially in the Marañón Valley and the *llanos* region; these are the nominate race and the race *cinnamomeus* of the Pale-legged Hornero (*Furnarius leucopus*), subspecies *inornatus*, *castilloi* and *peruvianus* of the Rufous-

fronted Thornbird, and the monotypic Chestnut-backed Thornbird (*Phacellodomus dorsalis*). The three genera *Margarornis*, *Pseudocolaptes* and *Thripadectes* are restricted to humid montane forest of the Andes and the highlands of Costa Rica and western Panama. *Anabacerthia* is similar, but has a representative in montane areas of south-eastern South America. Four genera, *Philydor*, *Automolus*, *Sclerurus* and *Xenops*, are confined mainly to lowland tropical forest of Central America, Amazonia and the Atlantic Forest region. In contrast to the rest of the family, the genera *Synallaxis* and *Cranioleuca* are extremely broad in their habitat and biogeographical distributions.

In general, many members of Furnariidae show a strong tendency for specialization on habitats of unusual vegetation structure. Thus, several members of the family represent some of the most severe examples of habitat restriction among birds. The Point-tailed Palmcreeper is completely confined to groves of palm trees, mainly of the genus *Mauritia*. As these groves can be remarkably isolated from one another, and sometimes remarkably small, the palmcreeper presumably has excellent dispersal abilities that allow individuals, most likely independent young, to colonize isolated habitat clumps, perhaps then spending their entire lives within that clump. The vigour with which a pair of palmcreepers responds to tape playback suggests that these palm groves, often scarce, are tenaciously defended against prospecting individuals. The Araucaria Tit-spinetail is likewise restricted to a single species of tree, *Araucaria angustifolia*. Although this tree is more widespread and continuously distributed within its range than are the palms required by the Point-tailed Palmcreeper, the degree to which the Araucaria Tit-spinetail is restricted to that tree species is at least as dramatic. As a further example, the recently discovered Cipo Canastero is confined to a particular scrubby habitat found only around isolated rocky outcrops. Its global population must, therefore, be remarkably small, for the total area of such habitat, known as "*campo rupestre*", is minuscule in comparison with most habitat types.

The Furnariidae are particularly prominent as habitat specialists along the gradient of successional vegetation on river islands and some borders of major rivers in Amazonia. The various stages of succession, from open beaches to, ultimately, tall forest that is seasonally flooded, in general have an avifauna that shares few species with adjacent *terra firme* tropical forests. G. H.



Probing the nodes of bamboo plants in search of arthropods is one of the primary foraging methods of the **White-collared Foliage-gleaner**.

This species, which is restricted to the montane evergreen components of the Atlantic Forest of south-east Brazil, is strongly associated with bamboo thickets. It is an acrobatic feeder, mostly in the middle storey, and often climbs vertical stems and hangs upside-down as it forages. It obtains its invertebrate food by gleaning and probing along branches and among green and dead leaves.

The heavy, sharp bill of this furnariid is distinctive because of the straight culmen and sharply upturned lower mandible, and is occasionally used by the bird to hammer holes in bamboo stems to uncover prey.

A preference for bamboo is not uncommon within the ovenbird family.

At least three furnariid species are found exclusively within lowland *Guadua* bamboo thickets, and several others, including the one illustrated here, exhibit strong associations with bamboo habitat and are probably dependent on it. Studies have demonstrated, for example, that over 80% of the foraging activity of the White-collared Foliage-gleaner is directed at finding prey in bamboo plants. This ovenbird, incidentally, was formerly the sole member of the genus *Anabazenops*, but it has now been joined by the reclassified Dusky-cheeked Foliage-gleaner (*A. dorsalis*), which was previously treated as one of the *Automolus* foliage-gleaners.

[*Anabazenops fuscus*,  
Itatiaia National Park,  
Rio de Janeiro, Brazil.  
Photo: Edson Endrigo]





Rosenberg studied the birds of the early-successional stages on river islands in Peru. The furnariids that he considered obligate specialists on this habitat were the Pale-billed (*Furnarius torridus*) and Lesser Horneros (*Furnarius minor*), the White-bellied Spinetail (*Synallaxis propinqua*), Parker's Spinetail and the Red-and-white Spinetail. The White-bellied Spinetail is restricted to the earliest stage, a scrubby band of vegetation dominated by the willow-like shrub *Tessaria*. The Lesser Hornero, too, is found there, but it also occurs in the understorey of *Cecropia* woodland. Parker's Spinetail is most common in the early-successional scrub, but also ranges into *Cecropia* forest. The other two species were rare or absent at Rosenberg's primary study site. The Red-and-white Spinetail is highly restricted to the margins of oxbow lakes bordered by brush and grass, whereas the Pale-billed Hornero is found on older islands in *Cecropia* forest, mainly at edges. M. Cohn-Haft and Whitney have recently discovered that the Scaled Spinetail (*Cranioleuca muelleri*) is restricted to tall *várzea* forest.

The reason why the Furnariidae are so well represented among the Amazonian riverine-habitat specialists is presumably that the family has many species restricted to tropical water-edge habitats in general, thereby providing a large pool of candidates for such specialization. The Amazonian taxa usually have sister-species that are also associated to some degree with aquatic or water-influenced habitats, but have much wider distributions. For example, the Red-and-white Spinetail's sister-species is the much more widespread Yellow-chinned Spinetail of tropical marshes, and that of Parker's Spinetail is the far more widespread Rusty-backed Spinetail of riverine scrub and other water-edge vegetation. The Lesser and Pale-billed Horneros may both have shared a common ancestor with the Pale-legged Hornero, a more widely distributed species. The Scaled Spinetail's closest relative is presumably the Speckled Spinetail, also of *várzea* forests in Amazonia. In the case of the White-bellied Spinetail, however, the sister-species in *Synallaxis* is not certain.

Specialization on bamboo thickets, as illuminated by Parker and quantified mainly by Kratter, is a feature of many Neotropical bird species, and the Furnariidae are well represented among the bamboo specialists. The Peruvian Recurvebill (*Simoxenops ucayalae*), the Dusky-cheeked Foliage-gleaner and the Brown-rumped Foliage-gleaner are found only in or near *Guadua* bam-

boo thickets or, locally, in structurally similar *Gynerium* cane thickets. Other ovenbird species are strongly associated with thickets of bamboo, either *Guadua* in the lowlands or *Chusquea* in the mountains, but may not be restricted to them; examples include Des Murs's Wiretail, the Itatiaia Thistletail, the Rufous-capped (*Synallaxis ruficapilla*), Apurimac, Rufous, Cabanis's (*Synallaxis cabanisi*), White-browed and Light-crowned Spinetails (*Cranioleuca albiceps*), the Chestnut-crowned (*Automolus rufipileatus*), Rufous-necked and White-collared Foliage-gleaners, and the Striped and Flammulated Treehunters.

Parker, Fjeldså and colleagues have shown that the *Polylepis* woodlands of the high Andes have many bird species restricted to them. Surprisingly few, however, are ovenbirds, given the family's propensity for narrow habitat restriction. The Royal Cinclodes and the White-browed Tit-spinetail (*Leptasthenura xenothorax*) are the only furnariids known to be strict *Polylepis* habitat specialists. On the other hand, just as with bamboo, many furnariids are prominent members of the *Polylepis* avifauna, among them the Striated Earthcreeper (*Upucerthia serrana*), the Brown-capped (*Leptasthenura fuliginiceps*), Tawny, Rusty-crowned (*Leptasthenura pileata*), Streaked (*Leptasthenura striata*) and Andean Tit-spinetails (*Leptasthenura andicola*), the Creamy-crested (*Cranioleuca albicapilla*) and Baron's Spinetails, and the Line-fronted (*Asthenes urubambensis*) and Many-striped Canasteros (*Asthenes flammulata*), as well as the subspecies *arequipae* of the Creamy-breasted Canastero. Some of these ovenbirds may reach their highest densities in this habitat.

In many cases, it is suspected that a species must be restricted to a very narrowly distributed habitat, but the parameters that define this have yet to be discovered. The Hoary-throated Spinetail, for example, is known only from a small area of the upper Rio Branco, in extreme north Brazil and adjacent Guyana, where it is found in river-edge habitat. Such habitat, however, is essentially universal in Amazonia. Does the riverine habitat where the spinetail lives consist of some unusual plant association, found nowhere else? If not, what limits this species to that area? Similarly, the Orinoco Softtail is known only from one locality in the upper Rio Orinoco region; one wonders what is so unusual about that particular locality from the perspective of the softtail. The Russet-mantled Softtail is found at just a few localities in the Andes of northern Peru, generally in stunted timber-line forest;



**The Buff-tufted Cheek** specializes in rooting through dense epiphytic growth and associated debris in humid montane forest, where it targets, in particular, large bromeliads. These often contain little pools of water supporting communities of aquatic invertebrates and small vertebrates, such as frogs and salamanders, high in the canopy. Doubtless, it was from one of these that this individual obtained the frog that it is carrying back to its nest. This species exhibits strong sexual dimorphism in bill length, the female's bill being significantly the longer. This difference presumably confers an advantage in the exploitation of feeding resources, although the precise benefit remains a mystery.

[*Pseudocolaptes lawrencii lawrencii*, San Gerardo de Dota, San José, Costa Rica. Photo: Eduardo Libby]



Duetting and display by the **Brown Cachalote** probably achieve two aims, by affirming territorial ownership to possible rivals and also strengthening the bond between the partners. This species is thought to be monogamous, and mates sometimes stay together throughout the year. The pair-bond, however, appears to vary in duration, in some cases lasting for one season and in others representing a lifelong partnership. The sexes of the Brown Cachalote seem to have equal roles in incubation and brood-rearing. Although little or no detailed information exists for other furnariids, this pattern is thought to hold for the majority of the family.

[*Pseudoseisura lophotes*  
argentina,  
Las Lajitas,  
Salta, Argentina.

Photo: José & Adriana Calo]



it seems unaccountably absent from areas with similar habitat in the region, although, admittedly, this absence could be an artifact of poor sampling in the region. As a final example, the White-bellied Cinclodes appears to be confined to a relatively small area of high-elevation *puna* in central Peru, and is most frequently found in cushion-plant (*Distichia*) bogs. Boggy areas, however, are widespread in the *puna* zone of the Andes. What, if anything, is so different about the areas inhabited by this cinclodes?

Exposing of the prominent underwing pattern is a display method employed by a number of ovenbirds, most notably the miners (*Geositta*). For this **Scale-throated Earthcreeper** it probably serves a dual purpose by proclaiming territorial ownership and, further, attracting a mate and signalling a readiness to breed. This furnariid occurs in arid montane and lowland scrub and *puna* grassland. As with many avian species that inhabit arid regions, the breeding season will start with the commencement of the wet season. Persistent single-male song-perch singing or display has not been recorded for the Furnariidae, and this ties in with the belief that most members of the family are strictly monogamous.

[*Upucerthia dumetaria*  
hypoleuca,  
El Infiernillo,  
Tucumán, Argentina.

Photo: José & Adriana Calo]



Many of the Furnariidae, perhaps more than in any other passeriform family, are associated directly with water, from rocky intertidal pools to the edges of forest streams and to bogs in the high Andes. For example, most cinclodes species show affinities, to varying degrees, for water-edge habitats, some being totally restricted to littoral habitat; the Sharp-tailed Streamcreeper feeds almost exclusively along the edges of streams. At least three *Furnarius* ovenbirds, the Pale-legged, Pale-billed and Lesser Horneros, also regularly feed at the edges of rivers and streams. The Wren-like Rushbird, the Straight-billed and Curve-billed Reedhaunters, the Bay-capped Wren-spinetail and the Sulphur-throated Spinetail are mainly restricted to emergent vegetation in marshes, but the extent to which they take prey from the water, rather than from the vegetation, is unknown. Likewise, the two *Certhiaxis* spinetails are restricted to marsh and marsh-edge vegetation but, again, it is not known whether they obtain any prey from the water itself.

Similarly, it is possible that no other passeriform family contains so many species for which rocks are an essential habitat component, either as foraging substrates or as nest-sites. Although quantitative data are lacking, at least 16 furnariids are reported to glean rocks regularly or occasionally for food. These are the Creamy-rumped Miner (*Geositta isabellina*), the Bolivian Earthcreeper, the Royal, Bar-winged, Cordoba, Olog's, Surf, Seaside and Blackish Cinclodes, the Band-tailed Earthcreeper (*Eremobius phoenicurus*), the Crag Chilia (*Chilia melanura*), the Tawny and Plain-mantled Tit-spinetails, the Black-throated Thistletail (*Schizoeaca harterti*), the Cactus Canastero (*Asthenes cactorum*) and the Sharp-tailed Streamcreeper. Species known to use the crevices among or under rocks as nest-sites are the Rock (*Upucerthia andaeicola*), Straight-billed (*Upucerthia ruficauda*) and Chaco Earthcreepers, the Crag Chilia, the Long-tailed, Dark-bellied (*Cinclodes patagonicus*) and White-winged Cinclodes (*Cinclodes atacamensis*) in addition to five of the above-mentioned seven, the Brown-capped Tit-spinetail, the Cordilleran (*Asthenes modesta*), Sharp-billed (*Asthenes pyrrholeuca*) and Cipo Canasteros, the Spotted Barbtail and the Pearled Treerunner. Further fieldwork will certainly expand these lists. Of course, many additional species also occur in rocky habitats, but whether those species use rocks for anything other than singing perches has not been determined.





The incredible mud nest of the **Rufous Hornero** is just one of the many extraordinary nests built by a family of birds that display an incredible extravagance, diversity and complexity in nest architecture. The Rufous Hornero constructs its nest, using classic "adobe" techniques, from mud mixed with plant matter or dung. The result resembles an oven, and it is from this that the family has acquired its scientific and vernacular names. The globular structure is divided by an interior wall that partially separates the entrance area from the nest-chamber, inside which the eggs are laid on a crude cup of grass. The orientation of the entrance is variable, but often faces away from the prevailing wind. Nest design varies slightly, with some nests having two entrances and others having the entrance at the top. The large structure is usually conspicuously sited on a tree branch, post or roof, or even on the ground in bare areas. Building work can take up to three months or as little as two weeks, but in either case it involves the pair-members in an enormous expenditure of energy. Such a high-energy outlay in nest-building, however, is by no means unusual for the members of the Furnariidae. The resulting nests are some of the most outstanding protective shelters built by any of the world's birds, and probably explain why the ovenbird family is so well represented in the avifaunas of the harshest South American environments. Despite the amount of energy invested by ovenbirds in their nests, these are almost never reused by the birds that build them. Such well-built structures are, however, quickly taken over by a variety of other birds and animals in subsequent seasons.

[*Furnarius rufus commersoni*,  
Pantanal,  
Mato Grosso, Brazil.  
Photo: Luiz Claudio Marigo]



### General Habits

Broadly speaking, the furnariids are not conspicuous in their behaviour. Although they often adopt acrobatic postures when perching, they are generally rather skulking birds and tend to be wary. As a consequence, their general behaviour is not well understood.

So far as is known, all members of the family are exclusively diurnal. Many ovenbirds typically roost in their nests outside the breeding season, and some species construct nests that seem to serve only as roosting sites. Others, however, such as the Rufous Hornero, the Rufous-breasted Spinetail and the Slaty Spinetail (*Synallaxis brachyura*), do not sleep in their nests, but in nearby dense vegetation. Some leaf-tossers have been found to roost in a vertical position at the bases of trees.

There are no published studies of the daily movement patterns of any ovenbird. Typically, the furnariids appear to be territorial throughout the year, and most are suspected of remaining completely within a relatively small territory. As with almost all birds, singing typically peaks near dawn. Many ovenbirds, however, continue to sing frequently during the day, but an absence of quantitative data prevents any sort of comparisons among species or regions, or between seasons. Nonetheless, a number of species, particularly foliage-gleaners in genera such as *Philydor* and *Syndactyla*, have seldom been recorded as singing after dawn; their similarity in this respect to the woodcreepers possibly provides another hint that the two are more closely related than is indicated by traditional taxonomy (see Systematics).

The majority of furnariids typically occur in pairs throughout the year. For many species, the pair-bond persists outside the breeding season and, in many cases, probably throughout life (see Breeding). After breeding, a few species become more gregarious, forming single-species flocks. Feeding parties of up to 40 Plain-mantled Tit-spinetails have been observed, as have flocks consisting of 12-15 Lark-like Brushrunners. Flocks of up to seven individuals of the latter species can be seen during the breeding season, but these are not much larger than would be expected if they consisted solely of family-members. Concentrations of Rufous-banded Miners (*Geositta rufipennis*) consisting of several hundred individuals have been recorded, but these may be aggregations of migrants (see Movements), rather than integrated



flocks. In contrast, several furnariids seem to become solitary after breeding; A. F. Skutch placed the Streak-breasted Treehunter, the Red-faced Spinetail (*Cranioleuca erythrops*) and the Buff-fronted Foliage-gleaner in this category. Observations of ovenbirds foraging as solitary individuals are numerous, but whether this indicates that pair-bonds do not exist at that time is unknown.



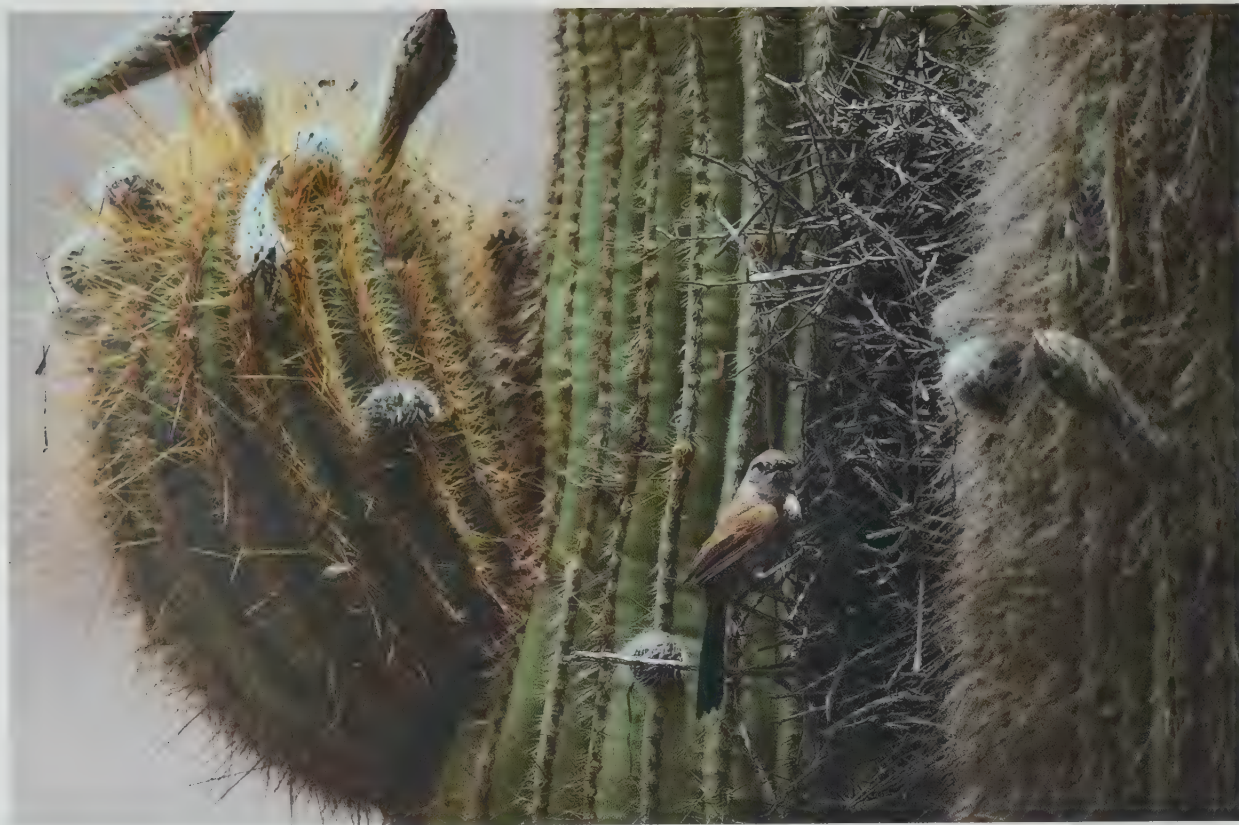
Although **Rufous Horneros** never reuse their nests, they often build new nests directly on top of old ones. It is possible that, for this species, nest-building is important in maintaining the lengthy, often lifelong pair-bond that exists, or perhaps the birds just wish to avoid the parasite burden that inevitably accumulates in previously occupied nests. In fact, many pairs routinely build more than one nest each year, before selecting one for final use. This level of effort appears to pay off in terms of reproductive success, which can be high, although, ironically for a species that nests in a "mini-oven", high temperatures can adversely affect breeding performance in some years.

[*Furnarius rufus albogularis*,  
São Paulo, Brazil.  
Photo: Fabio Colombini]

Nothing has been published on the breeding of the **Russet-mantled Foliage-gleaner**. The individual shown here was frequently entering and leaving this termitarium, and it is just possible that it had its own nest inside that of the termites. It was not seen to feed on the insects. Although little is known of the breeding behaviour of most members of the genus *Philydor*, the few species for which such information is available appear to use a hole in a bank, tree or wall for the nest, adding no more than a shallow lining.

[*Philydor dimidiatum baeri*,  
Das Emas National Park,  
Goiás, Brazil.  
Photo: Luiz Claudio Marigo]





In contrast to the oven-type nests of some furnariids, that of the **Creamy-breasted Canastero** is an amazing structure of thorny sticks, often sited in a tall, columnar cactus. The elongate, woven nest is impressively large, up to 4 m in length. It tapers at the top to incorporate a narrow entrance tube; this gives access to the inner chamber, which is spherical and completely lined with soft material. The thorny nature of the building materials, the situation in a prickly cactus and the narrowness of the entrance tube all combine to deter predators. Moreover, the nests are constructed so robustly that the dismantling of them is not a feasible option for a predator.

[*Asthenes dorbignyi*  
*dorbignyi*,  
Andes,  
north-west Argentina.  
Photo: Günther Ziesler]

Many furnariids are characteristic members of mixed-species flocks, within which they are generally found in pairs or small family groups (see Food and Feeding). On the other hand, the ovenbirds are not well represented in the aggregations of birds that follow army-ant swarms.

Virtually nothing is recorded of the comfort behaviour of the members of this family, and as yet there is no indication that such behaviour differs in any substantive way from that of typical passerines. "Anting" has rarely been noted in the Furnariidae, but this may reflect a lack of published observations. Skutch has recorded anting by the Plain Xenops on several occasions.

Moreover, there is an almost complete absence of detailed data on displays and postures given by these birds. The cinclodes' wing-raising or wing-flapping display, accompanied by song, appears to be a territorial display, as do the flight songs of the miners. The partly concealed throat patch of many *Synallaxis* spinetails and *Asthenes* canasteros is revealed when the birds erect their throat feathers, and the function of these displays is interpreted as the maintenance of pair-bonds. In response to song playback, some foliage-gleaners and the tuftedcheeks flare their throat feathers. Ovenbirds in a number of genera raise the crown feathers in what could perhaps be interpreted as an agonistic dis-



The domed, thorny stick nests of some ovenbirds are never reused by the species that constructs them. They are, however, so well built and secure that they are regularly appropriated in subsequent seasons by other birds, including other furnariid species. This **Plain-mantled Tit-spinetail** has taken over what is probably an old canastero (*Asthenes*) nest, inside which it will have placed its own simple small cup of twigs, hair and feathers. Plain-mantled Tit-spinetails also hide their nests in any other suitable cavities, such as holes in trees and cacti and crevices in rocks and buildings.

[*Leptasthenura*  
*aegithaloides*  
*aegithaloides*,  
San Manuel, Melipilla,  
Región Metropolitana,  
Chile.  
Photo: Manuel Marin]



The **White-throated Cachalote** builds an impressive stick nest, over a metre long and 50 cm across, by weaving together thorny sticks around a central breeding chamber. It builds a new nest each year, but often in the same location, leading to large amalgamations in favoured trees. This furnariid occurs in the arid lowlands of west-central Argentina. In some other bird families, one mechanism for ensuring reproductive success in similar harsh environments is to enlist the previous year's young as "nest-helpers". There is little evidence that this occurs among the ovenbirds, although it has been noted for the recently discovered **Pink-legged Graveteiro** (*Acrobatornis fonsecai*) and may also occur in the **White-throated Cachalote**.

[*Pseudoseisura gutturalis*  
gutturalis,  
La Pampa, Argentina.  
Photo: José & Adriana Calo]



play, but a great deal of research is needed before this interpretation is confirmed or negated. In general, little is known of the behaviour of furnariids in aggressive interactions.

### Voice

Although many ovenbirds are known for their loud songs and frequent singing, pleasing melody is not their forte. Moreover, their voices are remarkably homogeneous for such a large group. One could perhaps randomly scramble the published epithets of "dry",

"harsh" and "shrill", "accelerating" or "decelerating", "ascending" or "descending", and "trill" or "series of notes", and provide a passable description of the primary vocalization of the vast majority of species. For most furnariids that are more than about 15 cm in length, one could also add "loud" to the description. A theme in the songs of many ovenbirds is a series of slower, emphatic notes at the beginning or end of the main part of the song.

The low degree of variation among the songs of the various furnariids allows an observer familiar with the voices of just a few genera to identify most of the unfamiliar species immediately as furnariids. The exception to the non-melodious reputa-

Even among ovenbirds the well-studied nest of the **Rufous-fronted Thornbird** is a marvel of architecture. Built with carefully interlocked thorny sticks, some over 50 cm long, the massive structure, 2.5 m in length and up to 1 m across, hangs from a tree branch; it is initiated on a horizontal branch, but its weight causes the branch to bend. Riddled with entrance tunnels, the nest has up to nine main chambers and several antechambers. The eggs are placed in the lowest chamber. Incredibly, the interior is decorated with a lining of bark, hair, feathers and reptile skins.

[*Phacellodomus rufifrons*  
rufifrons,  
Caraça,  
Minas Gerais, Brazil.  
Photo: Luiz Claudio Marigo]







tion of the family is the genus *Sclerurus*, the whistled songs of which are often considered melodious, or, at the least, an "improvement" over the harshness or buzziness so characteristic of the family's vocalizations as a whole.

Unfortunately, not a single species of ovenbird has been studied thoroughly in terms of vocal repertoire, functions of various vocalizations, sexual differences, or ontogeny of vocal development. Geographical variation has been quantified, over the greater part of the respective ranges, for only three species, the Olive-backed Foliage-gleaner (*Automolus infuscatus*), the Rusty-backed Spinetail and Parker's Spinetail, all by K. J. Zimmer, and C. Lindell has studied that of the Pale-breasted Spinetail over a portion of its range. For many species no archived recording exists, and for a few not even qualitative descriptions of either the song or the calls, or both, are available. What can be said about the vocalizations of this family is, therefore, greatly restricted by a near-total lack of formal studies, and most of what follows must be regarded as tentative.

It may be predicted that for the Furnariidae, as suboscines, the primary songs of all species are inherited, not learnt, and one would also expect relatively simple songs and small repertoires to be the rule. Although this prediction appears, on the surface, to be generally borne out, several exceptions are noteworthy. In some genera, such as *Furnarius*, *Pseudoseisura* and *Phacellodomus*, the existence of long, complex and seemingly variable duets seems unusual for suboscines. In others, the primary vocalizations of some or all species are rather variable and difficult to define. In the case of many miners, cinclodes and tit-spinetails, for example, the presumed songs of a single individual seem to vary greatly

in length and intensity. Further, it appears that, for the majority of species in many genera, the length of the song is not fixed, but is rather variable both among and within individuals.

Furnariid songs are rather simple in structure, in general consisting of a series of similar notes that usually span a relatively broad frequency range, thereby sounding harsh or buzzy rather than clear or whistled. The series may accelerate or decelerate, and rise or fall in pitch, but the notes themselves are relatively similar in "shape". Although documentation is generally lacking, astute listeners hear differences between the voices of the sexes, in many species emphasized by frequent duetting.

What actually constitutes the "song" is not always entirely clear. In the *Synallaxis* spinetails, the primary vocalization is typically a series of two to four notes or a short chatter, and this is repeated frequently, in fact nearly constantly, in turn by the members of a foraging pair. Thus, in terms of frequency, complexity and apparent function, these vocalizations are more like contact calls than like typical songs. Furthermore, some *Synallaxis* spinetails have been heard on rare occasions to give longer, seemingly more complex vocalizations, such as during throat-flaring displays, and it is possible therefore that these are the true songs, but are rarely given. Nevertheless, P. Schwartz, a pioneer of the study of tropical bird voices, reasoned that the shorter vocalizations should be considered as songs. In order to illustrate how frequently these short "songs" of *Synallaxis* are delivered, Skutch counted them: on one occasion, a Pale-breasted Spinetail in Costa Rica delivered its two-noted songs at the rate of 36-41 per minute for a period of 35 minutes, producing a total of roughly 1300 songs.

Although formal studies are non-existent, ovenbirds that are permanent residents at tropical and subtropical latitudes appear to sing throughout the year. Some of those living in far southern latitudes, at high elevations and in highly seasonal habitats presumably exhibit seasonality in singing, but relevant information is absent. Intensity of singing typically reaches a peak near dawn, but many ovenbirds continue to sing frequently during the day (see General Habits).

### Food and Feeding

Few other bird families of comparable species richness have diets so restricted to invertebrates, primarily arthropods. An almost complete absence of quantitative analyses, however, prevents any synthesis of the relative frequencies of types of arthropod taken by furnariids. The insect orders most commonly detected in inspections of stomach contents are generally Orthoptera, Blattodea and Coleoptera, and larval Lepidoptera; Diptera, and Hymenoptera other than ants, seem to be particularly uncommon, which is not surprising in view of the virtual absence of aerial foraging by this family. Ants, on the other hand, not generally a major dietary item of most birds, are suspiciously over-represented in the stomachs of a few species, especially the Lark-like Brushrunner and the Rufous Hornero.

The genus *Cinclodes*, with three species restricted to aquatic habitats, and the rest frequently associated with shorelines, is the only one in which non-arthropod invertebrates have been found to be major components of the diet. Studies by A. H. Beltzer have also shown that molluscs are a major food item of populations of the Bar-winged Cinclodes living in aquatic habitats. The diets of the maritime cinclodes, dominated by intertidal invertebrates, are closer to those of shorebirds of the family Scolopacidae than to those of other passerine birds. Although the Surf Cinclodes (and presumably also the Seaside Cinclodes) lacks the enlarged salt gland found in many birds with a high intake of salt-water prey, it does have an enlarged Harderian gland, the viscous secretion of which evidently protects the eye from salt water.

Vertebrates have been recorded as being taken by a number of the larger furnariids, mainly the treehunters in the genus *Thripadectes*. Small frogs and lizards are the main vertebrates eaten, and no mammals or birds have yet been reported as prey items. Bird eggs are sometimes consumed by the Brown Cachalote.

It is worth pointing out that ovenbirds frequently use a foot to hold down prey items against a branch or the ground (see

*Illustrating the huge diversity in the nests of this family, that of the Red-eyed Thornbird is a long, "boot-shaped" structure of thorny twigs, suspended from the tip of a tree branch, with the entrance low down.*

*The entrance connects to a tunnel leading to the inner chamber and other ancillary chambers, all of which are decorated with material such as hair and feathers. These splendid nests are often usurped by other species.*

*The Red-eyed Thornbird is restricted to south-eastern Brazil, where its two subspecies have very recently been discovered to occur sympatrically and are presumably, therefore, separate species. The two appear to have different habitat preferences, with one found in evergreen forest and secondary woodland and the other favouring wooded habitats associated with wetlands. The large stick nests of certain ovenbirds have been shown to be interesting micro-habitats in their own right, supporting diverse communities of invertebrates.*

[*Phacellodomus erythrophthalmus erythrophthalmus*, Penedo, Rio de Janeiro, Brazil. Photo: Edson Endrigo]



Despite its relatively small size, the **Streak-fronted**

**Thornbird** builds an enormous nest very much in the style of those of other members of the genus *Phacellodomus*.

The greatly elongated structure is constructed from carefully woven thorny sticks, and can be up to 150 cm long and 50 cm wide. These birds are most easily observed in the vicinity of their nests, and this must, to a certain extent, reflect the amount of time that they devote to construction and maintenance of these massive structures.

Their nests are often situated, as here, such that they hang over a ravine or a cliff, but they are also placed in the open in a low tree or bush, or even on a utility pole.

The entrance hole is at the side of the nest and leads, via a short tunnel,

to the interior nest-chamber, which is lined with plant material, hair and feathers. **Streak-fronted Thornbirds** are resident in the Andes, from southern Peru to north-west Argentina, and occur in montane scrub and adjacent farmland, usually in semi-arid areas with cactus scrub.

They usually forage in pairs, gleaning and probing for arthropods at all levels from the ground up to the canopy.

The species appears to tolerate moderate habitat disturbance and human presence, even being frequent around houses.

[*Phacellodomus striaticeps striaticeps*,  
Laguna Larga,  
Jujuy, Argentina.  
Photo: Andy & Gill Swash]







A further example of the extraordinary nests built by the Furnariidae is provided by the **Wren-like Rushbird**. The nest of this species, built in aquatic vegetation, is an untidy conglomeration woven from wet grass and other plant material cemented together with wet mud, which quickly dries to give a strong, hard outer shell. The egg-chamber in the interior is lined with softer material. The whole structure is supported by several stems of the dominant emergent plant, which are firmly drawn into the structure and cemented in place. It usually sits about 80 cm clear of the water's surface. The side entrance is protected by an "awning", and it is this aspect of nest architecture that suggests a possible relationship between the Wren-like Rushbird and the two marsh-dwelling reedhaunters of the genera *Limnornis* and *Limnortyx*. Another similarity, at least with the Curve-billed Reedhaunter (*Limnornis curvirostris*), is that the eggs of the rushbird are blue-green; this is unusual within the ovenbird family, the members of which lay eggs that are mostly white or whitish. The relationships of this species, however, are unclear and are further confounded by plumage similarities with the rayaditos (*Aphrastura*). Like many temperate-zone furnariids, the Wren-like Rushbird is busy attending nests in the austral spring. Although not considered to be threatened, it depends on fragile wetland ecosystems and has, as all such species, suffered declines as a result of human activities. Locally, populations of the Wren-like Rushbird have been, and continue to be, adversely affected by drainage and by the lowering of water tables caused by such activities as plantation forestry and agriculture.

[*Phleocryptes melanops melanops*,  
Cahuil, Cardenal Caro,  
Región VI, Chile.  
Photo: Manuel Marín]



Morphological Aspects). The use of the feet for holding food is not widespread among passerine birds.

Vegetable matter has been infrequently recorded as food. Seeds are evidently an important or, at least, a regular part of the diet of some miners, especially the Rufous-banded Miner, and of the Russet-bellied Spinetail (*Synallaxis zimmeri*). Seeds have been found occasionally in the stomachs of a few other species, among them the Crag Chilia, several *Cinclodes*, some horneros, some canasteros, some earthcreepers and the Firewood-gatherer. Fruit has been recorded with certainty in the diets of only a few species: these are the Itatiaia Spinetail, the Rufous-breasted Spinetail, the Orange-fronted Plushcrown, the Grey-crested Cachalote (*Pseudoseisura unirufa*), the Brown Cachalote and the Black-tailed Leaf-tosser (*Sclerurus caudacutus*). Otherwise, seeds that may have come from unidentified fruit have been noted in the stomachs of a few individuals of other furnariids, namely several *Schizoeaca* thistletails and some *Synallaxis* spinetails. No examples of nectar-feeding have been reported; although the Orange-fronted Plushcrown has been seen to feed at flowers, it is not known whether it was foraging for insects or taking nectar.

The vast majority of the family's members search for cryptic or concealed arthropods on such substrates as bark, epiphytic vegetation on branches, curled dead leaves and debris suspended above the ground, leaf litter on the ground, or bare ground. Many species also search green foliage, but fewer than one might expect in such a large, mostly insectivorous family. A few excavate for invertebrates, either in branches, as with, for instance, the recurvebills and the xenops species, or in the ground, as is the case with the *Upucerthia* earthcreepers.

Many furnariids are considered among the most specialized feeders in the Passeriformes in terms of substrate specificity. For example, several species are specialized "dead-leaf searchers", with more than 75-90% of their recorded foraging manoeuvres being directed at dead leaves, either single ones or clusters, suspended above ground. Although sample sizes are still small in some cases, the following seven species are considered to be "dead-leaf specialists": the Speckled Spinetail, the Montane Foliage-gleaner (*Anabacerthia striaticollis*), the Rufous-tailed and Rufous-rumped Foliage-gleaners, and the Buff-throated, Olive-backed and Chestnut-crowned Foliage-gleaners. Several others are suspected of being at least as specialized, but further field-work is needed to confirm this. Numerous other furnariids frequently search dead leaves as part of their foraging behaviour, but are not so narrowly specialized; they include many or all species of *Cranioleuca*, *Thripophaga*, *Syndactyla* and *Thripadectes*, and some species of *Synallaxis*. Studies by R. Greenberg,

J. Gradwohl and K. V. Rosenberg have shown that these dead leaves provide diurnal refuges for many, primarily nocturnal, arthropods. Rosenberg found that curled dead leaves harbour many cockroaches (Blattodea), katydids (Tettigoniidae), spiders and small beetles, and that, the larger the leaf, the bigger and the more numerous are the arthropods inside them. Dead leaves held three to four times as many arthropods per leaf as did live leaves, with the largest dead leaves, 30 cm or more in length, averaging more than one arthropod per leaf. It is no wonder that many species of ovenbird seek prey in such places.

Another type of substrate specialization is the dedicated searching of epiphytic vegetation for concealed animal prey. The studies carried out by Sillett have quantified the degree of such specialization shown by birds in montane Costa Rica, where Sillett found that the Buffy Tuftedcheek and the Ruddy Treerunner directed over 95% of their searches at epiphytic vegetation. The tuftedcheek concentrates on tank bromeliads, whereas the treerunner searches primarily the layer of "moss", in reality consisting mainly of bryophytes and foliose lichens, attached to and suspended from branches. Although sample sizes are smaller, similar foraging behaviour has been found to be practised also by the Streaked Tuftedcheek and the Pearled Treerunner, the Andean counterparts of the two Costa Rican species, and is suspected for the other two treerunners, the Fulvous-dotted (*Margarornis stellatus*) and Beautiful Treerunners. In addition, the Pale-browed Treehunter evidently searches primarily epiphytic vegetation in the Atlantic Forest region. Many other ovenbirds regularly search large epiphytes but are not so specialized, examples of which include the Striped Woodhaunter, the Rufous-necked Foliage-gleaner, the Bolivian Recurvebill, the Black-capped Foliage-gleaner (*Philydor atricapillus*) and some of the *Thripadectes* treehunters. A large number of others persistently to regularly examine the layers or clumps of epiphytic bryophytes and lichens on tree branches, but the extent to which they exploit this foraging substrate has not yet been quantified or, if it has, does not indicate any specialization on this substrate. Examples include many species of *Leptasthenura*, *Cranioleuca*, *Syndactyla* and *Thripadectes*, both rayaditos, the Line-fronted Canastero, the Streak-fronted Thornbird, the Spectacled Prickletail, the Pink-legged Graveteiro, the Rusty-winged, Spotted and Roraiman Barbtails, the Beautiful Treerunner, the Scaly-throated, Montane and Buff-fronted Foliage-gleaners, the Sharp-billed Treehunter and the Rufous-tailed Xenops. The Critically endangered Royal Cinclodes frequently probes and gleans mosses and lichens that encrust rocks, as also does the commoner Sharp-tailed Streamcreeper.

Many furnariids use burrows for nesting, as typified by the miners. The **Coastal Miner** often nests at the end of a 2-m tunnel in level, sandy ground, but it is not clear whether the birds excavate the burrows themselves, as do some miners, or appropriate those dug by other animals. Coastal Miners live in Peru, where they frequent sparsely vegetated sandy coastal desert and arid scrub, as well as a local habitat, known as lomas, that consists of rather barren low hills with meagre precipitation from the low clouds that develop when moist sea-air currents meet the desert hills.

[*Geositta peruviana* rostrata and nest-burrow, Paracas, Ica, Peru. Photos: L. Batten/FLPA]







The **White-eyed Foliage-gleaner** is typical of the genus *Automolus* in that its nest is placed at the end of a tunnel that the birds themselves have excavated into a vertical earth bank. The horizontal tunnel, about 60 cm in length, terminates in the nest-chamber, which contains a shallow cup of plant material and hair that holds the clutch of 3-4 eggs. As so little is known about the breeding biology of this large family, field observers should be aware that many of the nests of those species inhabiting humid forest, including those of several *Automolus* foliage-gleaners, remain undescribed.

[*Automolus leucophthalmus sulphurascens*, Linhares, Espírito Santo, Brazil. Photo: Edson Endrigo]

Almost certainly the most specialized of all furnariids is the Point-tailed Palmcreeper, which seeks food exclusively in the fronds and foliage of palm trees, and is evidently the only Neotropical bird species thus specialized. The Cinnamon-rumped Foliage-gleaner (*Philydor pyrrhodes*) is frequently found in or near palms, and often searches fronds and the dead leaves trapped in palms, but it is less of a specialist than is the palmcreeper.

These types of foraging substrate are generally not available on a year-round basis at most temperate latitudes. In such regions, dead leaves suspended above the ground are normally found in quantities only in autumn and early winter, tank bromeliads and palms are absent, and extensive epiphytic growth is unusual. The exceptional species richness for which tropical latitudes are renowned can be explained, therefore, at least in part, by the addition to the bird community of such foraging specialists, many of them in the Furnariidae.

Many species of ovenbird are characteristic members of mixed-species foraging flocks, in habitats ranging from Amazonian forest to timber-line scrub and to desert washes. Most species in the genera *Leptasthenura*, *Cranioleuca*, *Margarornis*, *Pseudocolaptes*, *Anabacerthia*, *Philydor*, *Automolus* and *Xenops* are "professional" members of mixed-species flocks, but the only ones suspected of being "nuclear species" in such flocks are some of the *Leptasthenura* tit-spinetails. Within mixed-species flocks, ovenbirds are normally found in pairs or as family groups. Among furnariids of wooded habitats, only the terrestrial feeders of the genera *Furnarius*, *Sclerurus* and *Lochmias*, and some of the near-terrestrial *Synallaxis* spinetails of dense undergrowth, forage typically as single individuals or pairs.

Seasonal variation in social organization during foraging is unusual. Outside the breeding season, a few species form single-species flocks, whereas several others appear to become more solitary at that time (see General Habits).

In contrast to their frequent presence in mixed-species flocks, furnariids are not well represented in the concentrations of birds that regularly follow swarms of army ants to capture prey fleeing from the ants. E. O. Willis and others have noted many species of ovenbird as rare or occasional attendants at such swarms, but no one species of furnariid has been reported to be even a regular ant-follower, despite the abundance of ovenbirds in the undergrowth of forests harbouring army ants. This lack of exploitation

of army ants is perhaps due to the overwhelming tendency of the Furnariidae to be "substrate-orientated", dedicated to searching or manipulating specific substrates to reveal generally concealed prey, as opposed to "target-orientated", focusing on the direct, visual location of exposed prey items. The latter strategy is typical of many antbirds in Thamnophilidae, the family most famous for its association with army ants (see page 495), and is also used by the several habitual ant-followers among the woodcreepers, which are close relatives of the ovenbirds (see Systematics).

## Breeding

For the vast majority of species in the Furnariidae, data on breeding are lacking. Furthermore, the species for which some details are known are not randomly distributed but, instead, are strongly clustered in two geographical regions, namely Costa Rica and eastern Argentina. In the former of those countries, this information is, of course, the result of the decades of fieldwork carried out by the indomitable Skutch; the Argentine data result primarily from the fieldwork of S. Narosky, M. de la Peña, R. Fraga, P. Mason, and A. and P. Nores. In addition, B. T. Thomas, Lindell and Skutch have contributed important information on the Rufous-fronted Thornbird from work undertaken in the *llanos* region of Venezuela. Without the studies of these people, virtually nothing would be known about furnariid breeding biology.

Clearly, this concentration of fieldwork in so few areas leaves enormous gaps in knowledge for major biomes, where fundamental differences may exist because of underlying differences in temperature and rainfall, and in the seasonality of resources. Most dramatically, virtually nothing is known about the breeding biology of any ovenbird in Amazonia, the Atlantic Forest region of south-eastern South America and the cloudforests of the Andes, nor of any furnariid inhabiting the drier parts of the interior Andes, whether low hot valleys or high-elevation *puna*.

Timing of breeding has been quantified for a few ovenbirds, primarily species from towards the latitudinal extremes and, therefore, the most seasonal habitats. The limited quantitative data, combined with anecdotal information for many species, reveal virtually no surprises. For example, all furnariids studied so far in southern South America breed mainly during the austral spring



Another burrow-nesting furnariid, the **Buff-breasted Earthcreeper**, usually chooses the vertical earth bank of an ephemeral watercourse in which to excavate, although it sometimes places its nest in a deep rock crevice. The tunnel is usually 70-100 cm long, and ends in a nest-chamber with a simple pad of grasses and feathers. The two eggs are generally laid at the beginning of the austral summer, from November. Because nest architecture is so varied within the Furnariidae, as well as being an indicator of taxonomic relationships, it is not surprising that it has been studied in some detail. These studies indicate that nesting in cavities is the primitive, ancestral condition of the ovenbird family, and that those taxa that have moved away from this method have "compensated" by building nests that are always covered in some way. Examples of the latter include the mud nests of the horneros (*Furnarius*) and the domed stick nests of the thornbirds (*Phacellodomus*) and canasteros (*Asthenes*). Such research, when applied to investigation of the systematic relationships among the various genera in the family, has supported many of the traditional groupings of the current sequence but has also raised a significant number of unanswered questions and new ideas. Examination of the cavity-nesters that build simple woven cups of plant material in the egg-chamber produces a clade that includes the genera *Upucerthia*, *Geositta*, *Cinclodes* and *Furnarius*, as well as a number of taxa from the "opposite" end of the traditional linear sequence, such as the *Philydor* foliage-gleaners and *Xenops*. Questions raised by such research are amenable to testing by use of genetic data.

[*Upucerthia validirostris*  
*validirostris*,  
 El Infiernillo,  
 Tucumán, Argentina.  
 Photo: José & Adriana Calo]





and summer months, as would be expected for insectivorous species, and those studied in Middle America breed primarily near the onset of or during the wet season. Species living in arid and semi-arid areas also breed when expected, starting at the onset of the wet season. In Surinam, the marsh-nesting Yellow-chinned Spinetail may breed in all months of the year. Where data are lacking, unfortunately, is from low-latitude Amazonian forest and Andean cloudforest, where furnariid species richness is highest, where predictions are less clear-cut, and where the timing of the breeding seasons of birds in general is poorly known.

Discounting replacement clutches, it is apparently unusual among the Furnariidae for more than one breeding attempt to be made in a single season. True second nestings have been noted for pairs of Common Miners, Rufous Horneros, White-whiskered Spinetails, Dusky-tailed Canasteros (*Asthenes humicola*), Rufous-fronted Thornbirds and Scaly-throated Leaf-tossers (*Sclerurus guatemalensis*). Further study may reveal that double-brooding is much more frequent than is currently realized.

Information relating to seasonal gonadal enlargement is considered to be generally of limited value in determining the breeding seasons of furnariids. This is because it is uncertain to what degree such data actually track the timing of breeding by ovenbirds, which are typically paired and territorial throughout the year, and often begin work on their complex nests many months before breeding proper begins. Without comparisons with gonad size during the breeding period itself, therefore, "enlarged gonads", at least in males, may indicate only that the bird is paired, defending a territory, and perhaps building a nest long in advance of eggs being laid. In the case of females, enlarged ova or ruptured follicles are, of course, convincing evidence for breeding, but it is usually impossible to determine whether broad statements along the lines of "enlarged gonads" include such higher-quality evidence. Likewise, nest-building is not a particularly good indicator of timing of breeding by ovenbirds because, as mentioned above, this may begin months in advance of the actual breeding attempt itself, and in some species goes on to a limited degree all year round, which is not surprising when one considers the complexity of many ovenbird nests.

The Furnariidae are as "dull" in terms of social-system diversity as they are in plumage coloration (see Morphological Aspects). With the caveat that studies of marked populations are almost nonexistent, all indications are that monogamy is by far the most common, if not the only, mating system in the family. The high proportion of species that characteristically feed in pairs also suggests that genetic monogamy, rather than just social monogamy, may be predominant. A typical response of many species to the playback of their songs is that both members of a pair react aggres-

sively, often with vigorous duets. Furthermore, these pair-bonds are known, or are suspected, to persist beyond breeding in many species, such as the Rufous Hornero, the Slaty Spinetail, the Firewood-gatherer, the Ruddy Treerunner and the Brown Cachalote, although a few appear to become solitary after the breeding season ends (see General Habits). Despite a lack of hard data, many furnariids are suspected of having lifelong pair-bonds. Fraga found that some individuals of the Rufous Hornero remained paired to one another for up to four years, whereas other individuals switched mates even if the pre-existing one was still present. Nores and Nores found a similar flexibility in the Brown Cachalote, with some partners remaining together for at least four years and others switching mates within a single breeding season. For the only furnariids that have been studied in sufficient depth, therefore, the duration of the pair-bond is flexible. Long-term ringing studies on other species are urgently needed to provide critical comparisons among and within species, genera and habitats.

Not a single case of polygyny or polyandry has been documented for any furnariid. Promiscuity seems particularly unlikely, given what is known of the natural history of the family as a whole. For example, no species has been suspected of forming leks, nor has persistent single-male song-perch singing been reported.

For only a few species has suspicion arisen that the social system is more complex than monogamy. Although groups of up to seven Lark-like Brushrunners are common during the breeding season, with somewhat larger flocks at other times (see General Habits), observations of this species at the nest have typically involved only pairs, although in one case it was suspected that more than one female had laid eggs in the same nest. The social unit of the Rufous-fronted Thornbird consists of a pair, with one or more additional individuals that sleep in separate chambers within the nest. It is strongly suspected that these "extra" birds are the young from previous broods. Careful studies by Thomas found that they did not contribute to the raising of the offspring, but only to defence against predators and, in a minor way, to nest maintenance; thus, they barely merit the label "nest helpers", which normally requires that help be directed towards the feeding of the young. However, a recent study in Brazil detected an instance of a helper feeding a nestling, which suggests that true helpers may be present in that population. Adding to the many oddities surrounding the Pink-legged Graveteiro, an individual in immature plumage was observed while feeding a begging juvenile, which was also being fed by adults. This species, not described until 1996, provides the first instance of true helping in the family; young graveteiros were also watched as they assisted in nest construction. Also, Zimmer and Whitaker found that, al-



Leaf-tossers represent another group of burrow-nesting ovenbirds. The **Rufous-breasted Leaf-tosser**, an adult of which is here leaving the nest after an incubation stint, excavates in earth banks and among the roots of fallen trees, or simply uses pre-existing holes. Very few data exist on incubation periods and hatching patterns of the Furnariidae. For a bird the size of this leaf-tosser, weighing 30-38 g, it is likely that incubation lasts for at least 20 days and that the sexes share incubation duties.

[*Sclerurus scansor scansor*, Serra dos Órgãos National Park, Rio de Janeiro, Brazil. Photo: Kristof Zyskowski/VIREO]



This **Thorn-tailed Rayadito** is ejecting unwanted plant matter from a suitable tree cavity, before lining it with carefully chosen twigs, grasses and feathers. This species will nest behind loose bark, as well as in any cavity in a tree or dead snag. It lives in central and southern Chile and adjacent parts of Argentina, where it frequents tall humid forest, usually of southern beech (*Nothofagus*). Interestingly, two of its three subspecies inhabit tussock grass and low shrubs on treeless offshore islands. The nest-site selection of these island birds must, therefore, differ from that of the nominate, mainland race, but details are unknown.

[*Aphrastura spinicauda*  
*spinicauda*,  
Los Glaciares National  
Park, Santa Cruz,  
Argentina.

Photo: José & Adriana Caloj



though most breeding territories of the Caatinga Cachalote (*Pseudoseisura cristata*) were defended by an adult pair, a substantial portion were defended by three or four birds in adult plumage, or by a pair of adults and a juvenile; in at least one case, all four adult-plumaged birds brought food to the nest. Finally, Ridgely observed four Orange-fronted Plushcrows as they attended two nests close to one another. This is another of those species for which small groups, presumably families, and including birds in subadult plumage, are the typical social unit. Perhaps this unusual furnariid also has an unusual social system.

Records of courtship feeding have been published for just three ovenbird species, the Pale-legged Hornero, the Rufous-fronted Thornbird and the Plain Xenops, but with only a single instance in each case. The scarcity of such records seems to re-

flect genuine rarity of this behaviour in the family. Allopreening by paired individuals has been noted only once, involving two Slaty Spinetails watched by Skutch.

Data on the roles of the sexes during breeding are few and suffer from small sample sizes. Bearing that in mind, the few existing studies suggest that, throughout the family, both members of the pair contribute to nest-building, incubation, and the feeding of nestlings and fledglings, but the absence of sexual plumage dimorphism (see Morphological Aspects) impedes determination of the relative contributions by each sex. Quantitative observations by Skutch on a small number of species, such as the Slaty Spinetail, the Buff-throated Foliage-gleaner, the Scaly-throated Leaf-tosser and the Plain Xenops, are consistent with the qualitative impressions of many ornithologists who are familiar

A good supply of wet mud is vital for all birds that build mud nests, including the **Crested Hornero**. This species uses wet mud and plant fibres to build a classic "adobe oven" nest in a conspicuous location. The nest is very similar to that of the Rufous Hornero (*Furnarius rufus*), but is slightly smaller. The Crested Hornero is fairly common in lowland Chaco and dry woodland, often near human habitation and clearings, in south-east Bolivia, western Paraguay and north-west Argentina.

[*Furnarius cristatus*,  
Joaquín V. González,  
Chaco, Argentina.  
Photo: Andy & Gill Swash]







**Rufous Horneros** and other *Furnarius* species that build mud nests use classic adobe construction techniques. Wet mud and fibrous material are mixed together and used to build up walls 3-5 cm thick; each layer is left to dry in the sun before the next is added. The resulting structure is very strong and can weigh 5 kg. Such nests, which litter the horneros' territories, are reused for nesting or roosting by a variety of birds, and also provide shelter for reptiles and small mammals. The engineering qualities of this simple building material and technique have been exploited by human builders around the world.

[*Furnarius rufus commersoni*, northern Pantanal, Mato Grosso, Brazil. Photos: Jean-Louis Klein & Marie-Luce Hubert/Bios]

with furnariid breeding biology, namely that the sex roles are roughly equal. This also accords with the conspicuous absence of strong sexual dimorphism in the family.

That both sexes incubate the eggs and feed the nestlings has been confirmed for seven species. These are the Common Miner, the Rufous Hornero, Pinto's (*Synallaxis infuscata*), Rufous-breasted and Slaty Spinetails, the Brown Cachalote and the Buff-throated Foliage-gleaner. In addition, male and female Scaly-throated Leaf-tossers share incubation, and both sexes of the Blackish Cinclodes, the Masafuera Rayadito, Streak-breasted

Treehunter and the Black-tailed Leaf-tosser are known to feed the chicks. Possible exceptions to the pattern are the Buffy Tuftedcheek and the Rufous-rumped Foliage-gleaner, for each of which only one nest has been studied. In both cases, only one parent was noted as attending the nest, and one may suspect that the same applies to the Buffy Tuftedcheek's sole congener, the Streaked Tuftedcheek.

A separate monograph could, and should, be written on the nests of the Furnariidae. Although the family is rather monotonous in most aspects of its life, it compensates for this in part



With a beak full of wet mud, this **Rufous Hornero** displays prominently on top of a nest under construction while its partner calls vigorously from the nest entrance. Pairs often display during the nest-building phase, 2-3 months long, of the breeding cycle, and this ritual may be an important part of courtship and also help to sustain the year-round pair-bond that exists in this species. Such visual and vocal signals, together with the conspicuous placement of the large nest, must also play a major part in the declaration of territorial ownership to nearby rivals.

[*Furnarius rufus commersoni*, Pantanal, Mato Grosso, Brazil. Photo: Günther Ziesler]



As its name suggests, the **Firewood-gatherer** is often seen carrying sticks as it tirelessly builds its large nest. The final structure, up to 2 m in length and invariably conspicuous, is usually placed low in an isolated bush or tree, often close to previous years' nests. This species uses various human artefacts, such as glass and string, to decorate the entrance hole and tunnel leading to the nest-chamber. It is also one of few ovenbirds known to be double-brooded, although, as breeding data are lacking for the vast majority of the family, this may be more common than is supposed. Equally unusual is the fact that the first-brood offspring occasionally help the parents to build the nest for the second brood.

[*Anumbius annumbi*,  
Buenos Aires, Argentina.  
Photo: Yves Bilat]



through a diversity and complexity of nest types that is rivalled by no other bird family. The nests of some ovenbirds are so large that they must be the biggest or heaviest, in relation to the body size of the bird, of any in the Passeriformes. For example, a pair of Rufous Horneros, each partner weighing 50 g, may construct a nest that has a weight of 5 kg, one hundred times that of the bird itself. The total energy expended by the pair in collecting, transporting and moulding that amount of mud and straw is difficult to imagine. Ovenbird nests cannot rival those of some weavers (Ploceidae), but the large nests of the colonial

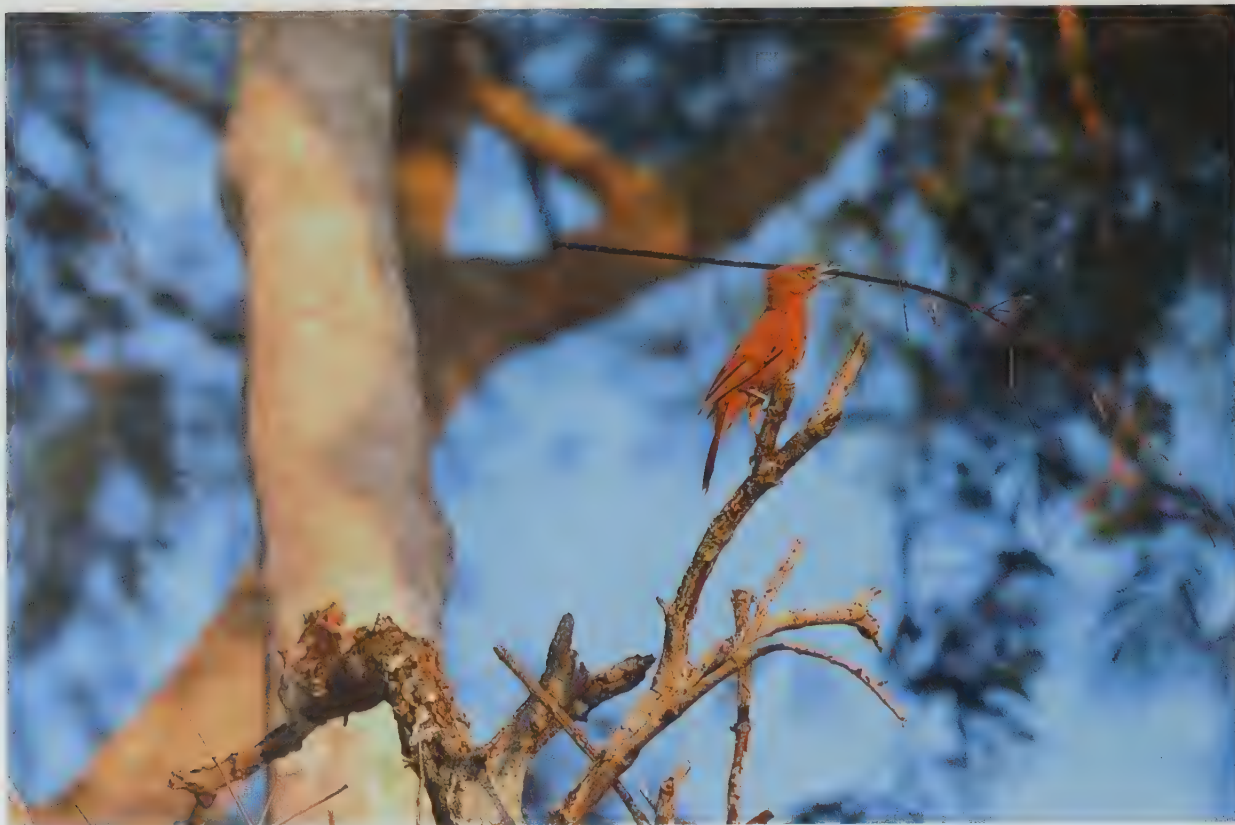
weavers are typically the result of the efforts of all colony-members, rather than the single-pair efforts of the ovenbirds. Furthermore, the branches used in many ovenbird nests are so big that they must represent the upper limit of what a bird can carry in its bill in terms of relative weight and bulk. In fact, in order to believe that the branches used by some furnariids are carried to the nest by the birds themselves, one has to witness the birds in the act of doing so. Scant evidence suggests that sticks weighing more than the individual bird itself are carried by means of a series of short flights.

Ovenbirds that build stick nests, such as this **Yellow-chinned Spinetail**, take great care in constructing them, and the resulting structures are extremely strong. A human can stand on some of the nests of the cachalotes (*Pseudoseisura*), for example, without damaging them. This structural strength, and the fact that thorny sticks are used in the construction, must deter even large mammalian predators from attempting to open up the nests. The Yellow-chinned Spinetail inhabits wetlands. Its nest measures about 40 x 30 cm, with a long curving entrance tunnel, and is usually low in vegetation, close to or over water.



[*Certhiaxis cinnamomeus*  
*russeolus*,  
Río Pilcomayo National  
Park, Formosa, Argentina.  
Photos: José & Adriana  
Calo]





For nest-building, the **Grey-crested Cachalote** uses enormous sticks and small branches, some of which can be 60 cm in length. The result is a large structure typical of many of the stick-nesting ovenbirds. Interestingly, this species also incorporates other materials, such as bones, crab carapaces, large feathers and snail shells, into the structure, and decorates the interior chamber with bark and snakeskin. An extremely similar nest is built by the closely related *Caatinga Cachalote* (*Pseudoseisura cristata*), which was until recently regarded as conspecific with the Grey-crested Cachalote.

[*Pseudoseisura unirufa*, Aquidauana, Mato Grosso do Sul, Brazil.  
Photo: Edson Endrigo]

The complexity, durability and size of the nests of many furnariids naturally make them ideal shelters for other animals. The invertebrate faunas using ovenbird nests are impressive in their diversity and abundance. Many depend on the presence of the adult birds or nestlings for food, as is the case with blood-sucking Hemiptera such as *Psammolestes* and *Triatoma* and mites (Acarina), but many others use the nest structure primarily for shelter. The large stick nests of the Firewood-gatherer, the Rufous-fronted Thornbird and the Brown Cachalote can host hundreds of arthropods that use it for shelter, or that feed upon smaller arthropods sheltering therein, including beetles, cockroaches (Blattodea), spiders, pseudoscorpions (Pseudoscorpiones), millipedes (Diplopoda) and flies. Social wasps place their nests in abandoned thornbird nests, and sometimes in active ones, and honeybee colonies have been discovered in the old nests of Rufous Horneros.

Other birds regularly use abandoned ovenbird nests for nesting or roosting purposes. Mason found, for example, that old nests of the Rufous Hornero at his study site in Argentina become nest-sites for Tufted Tit-spinetails, White-rumped Swallows (*Tachycineta leucorrhoa*), Saffron Finches (*Sicalis flaveola*) and introduced House Sparrows (*Passer domesticus*). Other species noted as using Rufous Hornero nests are the White-winged Swallow (*Tachycineta albiventer*), the Brown-chested Martin (*Progne tapera*), the House Wren (*Troglodytes aedon*), the Chopi Blackbird (*Gnorimopsar chopi*), the Cattle Tyrant (*Machetornis rixosus*) and *Forpus* parrotlets, these last also frequently using nests of the Pale-legged Hornero in western Peru. Thomas, Lindell and Skutch found that Rufous-fronted Thornbirds nests are used by Saffron Finches, Cattle Tyrants, Piratic Flycatchers (*Legatus leucophaius*), Stripe-backed Wrens (*Campylorhynchus nuchalis*) and Blue-grey Tanagers (*Thraupis episcopus*) among others; these species may use old nests or unused chambers within an active nest. Although the presence of nest associates may result in aggressive interactions and occasional egg loss, Lindell found that active thornbird nests with avian nest associates were more successful than those without, presumably due to improved defence against predators. These researchers also found that the Troupial (*Icterus icterus*) regularly evicts the thornbirds, rather than waiting for the nest to be abandoned; Lindell found that of 76 observed thornbird nest failures 6 (8%) were caused by Troupials.

Brown-chested Martins and House Sparrows also occasionally succeed in evicting Rufous Horneros from their nests. The Bay-winged Cowbird (*Agelaioides badius*), an obligate nest-adopter, uses the nests of the Rufous-fronted Thornbird and the Firewood-gatherer. Other vertebrates, too, regularly use ovenbird nests. Several rodents, including species in the genera *Thomasomys*, *Proechimys* and *Oryzomys*, have been found roosting in ovenbird nests, but it is not known whether they usurped these or used abandoned ones. Lizards, small snakes and frogs sometimes shelter in the nests of the Rufous-fronted Thornbird.

At least some published information on nests is available for about 170, or over 70 %, of the 236 furnariid species. This figure, relatively high for a largely tropical-latitude family, is due in part to the relatively conspicuous nests of many species. Zyskowski and Prum undertook the mammoth task of compiling all published and unpublished data on nests of the Furnariidae, organizing the variation into characters, and analysing those characters by phylogenetic methods (see Systematics). This important analysis is a foundational paper for the biology of the Furnariidae, and also provides a model for the analysis of nest data. Much of what follows is taken directly from their 1999 paper. Zyskowski and Prum identified 24 "character states" that they used to score each species for which data were available, and these characters are outlined below. For several reasons, including the scarcity of data on the nest-building behaviour of many species, these features were restricted to the form of the nest itself, and took no account of the behaviour used in constructing it. For example, "burrows" were treated alike, regardless of whether they were excavated by the birds themselves or by other animals.

The adobe mud nests made by ovenbirds in the genus *Furnarius* are remarkable structures in terms of size, mass and architecture. Although this genus and its characteristic "adobe oven" nests provide both the English and the scientific names for the family, this nest type is in fact quite unusual in the family, being restricted to the one genus. Moreover, at least one species, the Wing-banded Hornero, evidently does not construct that type of nest, and another, the Pale-legged Hornero, may adopt nests of other birds. The walls of a *Furnarius* oven are made of mud mixed with plant material or dung, which becomes extremely hard when dry. One of the inner walls also folds inwards, divid-



The technique used by the **Wren-like Rushbird** to construct its nest is unique within the ovenbird family. The bird carefully weaves wet fibrous plant material into a domed structure and cements the fibres together with coatings of wet mud. The eggs are not laid until the nest dries and hardens. The variety of nests built by the members of the Furnariidae is staggering, but all fit neatly into three main categories: mud nests, cavity nests and domed nests. That of the Wren-like Rushbird falls into the last category, which is perhaps the most diverse grouping. Domed nests are constructed of plant material, often sticks, and occasionally have special architectural features. One such feature is the "awning" that the rushbird adds above the entrance hole of its nest. Other special features of domed nests include reinforcement, or "thatching", of the dome, as is carried out by some of the *Certhia* and *Synallaxis spinetails*; the construction of protruding entrance tubes, as, for example, by the *Red-shouldered Spinetail* (*Gyalophylax hellmayri*); and the great variety of interior layouts of the stick nests, with tunnels, varying numbers of chambers and antechambers, and often some degree of "decoration" with objects such as snakeskins and refuse. The second nest-type category, the cavity nests, encompasses all those species that either opportunistically adopt suitable cavities or excavate their own burrows into banks or level ground. Most cavity-nesting ovenbirds construct simple woven cups in which to lay the eggs, but some do no more than to provide a layer of plant material on the cavity floor. The final category includes those horneros (*Furnarius*) that build nests from mud.



[*Phleocryptes melanops melanops*,  
Salado's Depression,  
Buenos Aires, Argentina.  
Photos: Yves Bilat]





ing the interior into an entrance way and a nest-chamber, somewhat reminiscent of a snail shell; a cup or platform of grasses or other vegetation holds the eggs. The entrance can be on either the "left" or the "right" side of the nest, but usually faces away from the direction of the prevailing wind.

A second major nest-type category encompasses nests placed in some sort of cavity, treated as a single character by Zyskowski and Prum. For many taxa, the cavity is an abandoned woodpecker hole or a natural hollow, much like those used by "secondary cavity-nesters" worldwide. Ovenbirds with this nest type include species in the genera *Aphrastura*, *Anabazenops*, *Philydor*, *Pseudocolaptes*, *Pygarrhichas* and *Xenops*; *Pygarrhichas* and *Xenops* species also occasionally excavate their own cavity in soft wood. Otherwise, the cavity is frequently in the form of a burrow, typically a horizontal tunnel roughly 1 m long in a vertical or steep dirt bank, such as along an eroded streambed or cliff, often in the upper quartile of the height of the bank. This type of site clearly restricts access to the nest by many kinds of nest predator. The drawback is that the availability of suitable sites of this sort is often highly limited. In many or most cases, it is not certain whether these tunnels are excavated by the ovenbirds themselves or are the abandoned burrows of rodents or other birds. Species known to excavate their own nest-tunnels include at least four species of miner, five *Upucerthia* earthcreepers, the Crag Chilia, nine species of *Cinclodes*, three of *Thripadectes* and four of *Automolus*, one species of *Hylocryptus*, one leaftosser, and the Sharp-tailed Streamcreeper; these numbers will almost certainly grow with further field studies. Some furnariids are known to use burrows excavated by other animals. As examples, the Puna Miner (*Geositta punensis*) uses burrows of rodents known as tuco-tucos (*Ctenomys*) and the Common Miner those of viscachas (*Lagostomus*), whereas the Campo Miner uses tunnels within armadillo (*Dasypodidae*) burrows, the Slender-billed Miner exploits *Upucerthia* burrows, and the Blackish *Cinclodes* uses diving-petrel (*Pelecanoides*) burrows. Many species in these genera, especially *Cinclodes*, also nest in natural crevices in rocks, cliffs, and even buildings.

Within the general category of "cavity", Zyskowski and Prum distinguished several nest types based on the form of the nest itself within the cavity. For example, the White-throated Treerunner lays its eggs simply on the wood chips that accumulate at the bottom of the cavity during excavation. In the few known nests of the tuftedcheeks, the eggs were placed on a thick layer of tree-fern scales (ramenta), which are also sometimes used to cover the eggs when the bird leaves. The Crag Chilia places its eggs on a deep platform of sticks and the stiff feathers of larger birds. At least some species in the genera *Hylocistis*, *Automolus*, *Thripadectes* and *Sclerurus* build a platform that consists exclu-

sively of rachides of compound leaves. The Chaco Earthcreeper and ovenbirds in the genera *Geositta*, *Cinclodes*, *Furnarius* and *Anabazenops* construct a cup of ribbon-like vegetation, such as grass, leaf strips, or strips of inner bark. Cups of lightly woven, wiry plant material, primarily rootlets or fungal rhizomorphs of *Marasmius*, are built by members of the genera *Philydor*, *Automolus*, *Hylocryptus*, *Thripadectes* and *Xenops*. Several species line the nest with downy or pubescent vegetation, that of the genus *Solanum* being mentioned frequently in this context, and spider webs are also commonly recorded as being used in nest lining. Skutch found that the Rufous-breasted and Slaty Spinetails added fresh lining material daily during incubation.

The third major category of nest, a domed structure made of vegetable material, with an entrance on the top, bottom or side that leads to an interior nest-chamber, encompasses the rest of the species in the family for which data are available. Within this general category, nests made of sticks are most common; these are usually thorny if such sticks are available. Likewise, wire, including barbed wire, is often incorporated into the nest in areas where available. These domed stick nests are in general the largest and the most conspicuous of all, and often with little or no attempt being made to conceal them. They are typically added to and repaired whenever necessary during the breeding season; in many cases, the birds seem to adjust the placement of sticks for no apparent reason. Such nests may repel predators in one or more ways. Their placement at ends of branches, or embedded in cactus or other thorny vegetation, may limit predator access, and the thorns and the position of the entrance hole may help to prevent access to the nest-chamber. Those predators too large to use the entrance hole may be discouraged from breaking open the nest by its bulk and tight construction. In fact, some ornithologists have reported on the tremendous labour required, even with tools, to take apart such nests in order to examine their content or interior construction. As a consequence, these nests are also regularly usurped by other bird species, and sometimes by mammals. Reuse of nests by the breeding pair is virtually unknown among the Furnariidae, although reuse within a year has been recorded for the Rufous-fronted Thornbird and the White-whiskered Spinetail. Therefore, because they are so durable, old nests accumulate over time in a species' breeding territory and, as mentioned above, they are used frequently as nests, roosts or refuges by other species of bird, as well as by many other kinds of animal. Ovenbirds with domed stick nests are found in the genera *Eremobius*, *Schoeniophylax*, *Synallaxis*, *Gyalophylax*, *Certhiaxis*, *Thripophaga*, *Asthenes*, *Phacellodomus*, *Anumbius*, *Coryphis-*

Old ovenbird nests are often reused by other species. In order to make an old Rufous Hornero (*Furnarius rufus*) nest suitable for its own purposes, this **Tufted Tit-spinetail** is constructing a simple cup of twigs, grasses, feathers and hair inside the abandoned mud nest. This species will, in fact, use any suitable cavity, such as natural tree holes and woodpecker holes, and also the old stick nests of other furnariids. It breeds in the austral spring and summer, laying 2-4 eggs, which are incubated for 14-15 days.

[*Leptasthenura platensis*, Salado's Depression, Buenos Aires, Argentina. Photo: Yves Bilat]



This **Pallid Spinetail** was caught in the act of stealing twigs from the nest of another species, in this case a Crested Oropendola (*Psarocolius decumanus*). The stealing of nest material in this way has been reported for several furnariids, but this may be the first documented instance for this species. The nest of the Pallid Spinetail is a spherical mass of mostly mosses and lichens, placed among epiphytes on a tree. This ovenbird is restricted to the montane evergreen forest, woodland and mature second growth of south-east Brazil. Although it is not considered to be globally threatened, forest cover within its range has been greatly reduced.

[*Cranioleuca pallida*, Caraça, Minas Gerais, Brazil. Photo: Bret Whitney]



It is probable that this adult **Pale-legged Hornero** has been called off the nest by its partner, which is returning to take over the incubation of the eggs. For most ovenbirds, the sexes are thought to share duties during this stage of the breeding cycle, just as they do during territorial defence, nest-building, and caring for the nestlings and fledglings. Birds that exhibit little or no sexual dichromatism, as is the case with all of the Furnariidae, are usually monogamous and have equal roles. Observations of those ovenbirds that have been studied indicate that one parent incubates for about half an hour at a time, before being relieved by its partner. Incubating constancy varies, with adults being in the nest for 60-90% of the time during the incubation phase.

The Pale-legged Hornero is widely distributed over a large area of northern South America and favours semi-open lowland habitats with bare ground, such as riparian habitats, second-growth woodland edge, farmland and towns.

It is usually found close to water, and in Amazonia, at least, the nest is often placed on a branch hanging over open water. The nest is about 20 cm high, weighs 2 kg and is lined with plant fibres. Unusually, this species has been reported as taking over old mud nests of other *Furnarius* species, and even the stick nests of thornbirds (*Phacelodomus*) and *cachalotes* (*Pseudoseisura*).

The lower photograph, incidentally, provides a very effective illustration of the broad and striking wingbands that are a feature of many members of this family.

[*Furnarius leucopus assimilis*,  
Rio Negro, Pantanal,  
Brazil.  
Photos: Dante Buzzetti]







The task of brood-rearing is shared by the two parents. Here, the **Thorn-tailed Rayadito** on the right is perched just in front of the nest entrance while its partner, holding food in its bill, is about to enter to feed the young inside the nest. This small, attractive furnariid feeds in trees and undergrowth by gleaning arthropods from foliage, epiphytic growth and the bark of branches and trunks, from the understorey to the canopy. In many respects, it is the ecological equivalent of the tits (*Paridae*) of the Holarctic. Thorn-tailed Rayaditos usually forage in pairs, but during the non-breeding season, in the austral autumn and winter, they often form small foraging flocks of up to, occasionally, 15 individuals.

This species is a common component of the mixed-species feeding flocks within its range, and is considered to be a nuclear species around which other flock-members assemble every day. Curiously for a non-migratory bird, it seems to be capable of long dispersive flights and has successfully occupied several offshore islands, even those which have no tree cover. It has even reached the Falkland Islands. This ovenbird's sole congener is the slightly larger and duller-plumaged Masafuera Rayadito (*Aphrastura masafuerae*), found only on Alejandro Selkirk Island, in the Juan Fernández Islands.

That species is believed to have diverged from the Thorn-tailed Rayadito or to have descended from an ancestor common to both species.

[*Aphrastura spinicauda*  
spinicauda,  
southern Chile.  
Photo: Günther Ziesler]



This **Cipo Canastero** is busy providing food for chicks inside its well-camouflaged domed nest.

Closely associated with rocky outcrops, this species forages by gleaning arthropods from rock surfaces and the ground. This photograph is of great interest, because a nest description for this recently described furnariid has yet to be published.

From what can be discerned in the picture, the nest appears to conform to the type commonly built by the genus *Asthenes*, being a mass of interwoven twigs and branches placed low down in shrubby vegetation. The entrance hole is at the top of the nest, and a short tube or tunnel almost certainly leads to the breeding chamber in the heart of the structure.

[*Asthenes luizae*,  
Minas Gerais, Brazil.  
Photo: Anita Studer]



*tera*, *Acrobatornis*, *Pseudoseisura* and, probably, *Metopothrix* and *Xenerpestes*.

Some furnariids with domed stick nests also frequently incorporate into them other conspicuous material, such as feathers, bones, including nearly complete skeletons of reptiles, and cast-off snake skin. Human-made material, such as coloured glass, paper and thread, is also incorporated into the nest by some species. In fact, virtually every sort of trash discarded by humans and accessible to the birds has been recorded as being built into such nests. The Lark-like Brushrunner and the Firewood-gatherer are especially notorious for their use of refuse in this way, and the Rufous-breasted Spinetail is possibly the champion in terms of its use of snake skin. The function of using these materials is, however, unknown.

The dome may also be made of softer plant material. In nests of the *Schizoeaca* thistletails and the Itatiaia Spinetail, the outer layer of material is of *Sphagnum* moss, interwoven with herbaceous plant stems. Species in the genera *Margarornis* and *Premnoplex*, and some *Cranioleuca* spinetails, also use mostly mosses, whereas the material used by Des Murs's Wiretail, the Curve-billed Reedhaunter and some *Synallaxis* and *Asthenes* species is largely grasses or pliable plant stems. In some cases, involving the Straight-billed Reedhaunter and some *Cranioleuca* species, the nest is constructed from a mix of soft plant material and sticks.

The Wren-like Rushbird and the Bay-capped Wren-spinetail, each in a monotypic genus, are unique within the family in the detail of their nests. The former uses mud-coated plant material for the outer wall of the nest, the mud hardening to create a protective shell; the eggs are not laid until the nest dries. The wren-spinetail does not construct a dome over its cup nest, but the surrounding dense grass or reeds function as a wall and dome.

Within the general category of "domed nest", Zyskowski and Prum identified various additional architectural elements. For example, the area of the dome over the nest-chamber is often reinforced with supplementary material, which presumably further shields the eggs and nestlings from rain and sun. This "thatch" is present in the nests of the Chotoy and Red-shouldered Spinetails and those of some *Synallaxis* and *Certhiaxis* spinetails. Three marsh-nesting species, the Wren-like Rushbird and the Straight-

billed and Curve-billed Reedhaunters, also construct an overhead, semicircular shield, or "awning", over the entrance hole. A number of ovenbirds construct protruding, tubular extensions of the nest entrance, some up to 30-40 cm long, usually horizontal and occasionally curving upwards from a lateral entrance to the main section of the dome; these are made of the same material as the main portion of the nest. Such entrance tubes are built by the Band-tailed Earthcreeper, the Red-shouldered Spinetail, and spe-



Similarly, no formal description of the nest of the **Ochre-breasted Foliage-gleaner** exists.

This individual, perched at the nest entrance with a large orthopteran destined for one of its chicks, demonstrates, however, that it is rearing its young inside a natural tree cavity. Extremely little is known of the breeding biology of the Philydor foliage-gleaners. Indeed, nest descriptions have been published for only two of the ten species. From what can be gleaned from these, it appears probable that the members of this genus make a rudimentary cup of grasses and other plant material in a suitable cavity in a tree, bank or wall. There is no evidence that they excavate their own cavities but, with such a paucity of information, it is impossible to be certain.

[*Philydor lichtensteini*,  
Iguazú National Park,  
Misiones, Argentina.  
Photo: Julián Alonso]





Carrying a large spider for its young, this **White-eyed Foliage-gleaner** is about to enter its nest-burrow excavated in an earth bank, a site typical for the genus. This species is an uncommon to common resident in tropical lowland evergreen forest and mature second growth in eastern South America. The subspecies *sulphurascens*, shown here, is widespread in south-central and south-eastern Brazil, eastern Paraguay and north-east Argentina, and occurs in a good number of protected areas. The other two races, however, have very restricted ranges in coastal forest of north-east and east Brazil, areas that have suffered large-scale deforestation. As a result, they are almost certainly at risk of extinction.

[*Automolus leucophthalmus sulphurascens*, Minas Gerais, Brazil. Photo: Anita Studer]

cies in the genera *Synallaxis*, *Certhiaxis*, *Asthenes*, *Phacellodomus* and *Pseudoseisura*. In the nest of the Plain Softtail, two tubes ascend from opposite sides of the single interior nest-chamber; the tubes are draped with vegetation, so that they appear to be part of the interior of the nest.

The interior structure of domed nests also exhibits variation, but it is more difficult to categorize. The passageway from the entrance hole to the nest-chamber can vary in length, from being not much longer than the width of the wall of the nest itself, as with *Schizoeaca* and *Cranioleuca* for example, to being so long that it could be considered an interior tube or tunnel, as with many *Synallaxis*, *Schoeniophylax* and *Pseudoseisura* nests. Those who have studied ovenbird nest construction, such as Narosky and Zyskowski, do not consider these longer tunnels to be homologous to the exterior entrance tubes. The interior tunnels may have special lining materials, including shed reptile skin, as recorded for Rufous-breasted Spinetail nests, and trash; moreover, in the nests of some *Phacellodomus* thornbirds, the tunnel is partially constricted midway along its length, to form an antechamber anterior to the nest-chamber itself. The tunnel may also vary from being straight to being sharply curved. Of course, the orientation of the nest entrance, whether it is on the top, the bottom or the side, dictates to a degree the angle of the tunnel.

Domed nests placed above ground level vary in the way in which they are supported. Possibly the majority are supported from below by a crotch formed by two or more branches, but some are borne by a single horizontal branch. Some nests, such as those of the Marcapata (*Cranioleuca marcapatae*) and Light-crowned Spinetails, the *Premnoplex* barbtails and the *Margarornis* treerunners, are suspended beneath a branch by attachment of the upper surface of the nest, built from the top downwards, to that branch; nests of some of these species may also be suspended from rock overhangs. The *Phacellodomus* thornbirds begin the construction by building the bottom of the nest on a supporting horizontal branch, but the nest becomes so heavy as the bulk increases that its weight causes the branch to bend downwards, thus producing a pensile, or hanging, nest. The Wren-like Rushbird weaves vertical stems of marsh vegetation into the nest wall to provide support, and further cements these to the nest with mud. In the case of other marsh-nesting ovenbirds, such as the Sulphur-throated Spinetail and the Bay-capped Wren-spinetail, the main support for the dome is provided by vegetation below the nest.

Although the variation in nest architecture among the Furnariidae is exceptional, a unifying theme is that all of the

**Straight-billed Reedhaunters** feed their young on a variety of arthropods gleaned from wetland vegetation. The nest is an unusual domed structure made from a mixture of twigs and softer plant material. This ovenbird has very narrow habitat requirements and is found only in stands of spiny *Eryngium* sedge, a fact demonstrated by this nest, which is supported by, and constructed largely from, this plant. These strict ecological requirements, combined with a small geographical range, restricted to extreme south-east Brazil, Uruguay and eastern Argentina, mean that the species has been classified as Near-threatened. Wetlands within its range suffer from pollution, inappropriate waste management, and the drying effects brought about by plantation forestry.

[*Limnornis rectirostris*, Otamendi Reserve, Buenos Aires, Argentina. Photo: José & Adriana Calo]







Brood-feeding is a shared responsibility for this pair of **Grey-headed Spinetails**, as is the case with most ovenbirds. Arthropods are captured by acrobatic gleaning in branches and foliage and by creeping along small branches.

Young furnariids hatch blind, and either naked or covered in down, and are fed in the nest by their parents for 2-4 weeks before fledging.

After fledging, they are still dependent on their parents for food, and the juveniles of many species, such as those of the cachalotes (*Pseudoseisura*), remain in their parents' territory for up to a year or more and may roost with them in the nest. The nest of the Grey-headed Spinetail consists of a large mass of plant material wedged into a fork in a small tree or wrapped around a horizontal branch; access is via a side entrance.

It is typically placed 5-12 m above the ground. This spinetail is restricted to a fairly linear habitat in north-east and south-central Brazil, as it inhabits the narrow ecotone of deciduous forest and semi-deciduous forest found between the humid forest and the dry caatinga woodland.

This linear habitat is restricted by its very nature and is under intense human pressure from coffee-growers, timber extraction and agriculture. Despite these threats, the species appears to survive reasonably well.

[*Cranioleuca semicinerea*, Alagoas, Brazil. Photos: Anita Studer]





This wary **Sooty-fronted Spinetail** is delivering what looks like an adult moth to its hungry chicks. Such visits probably occur once or twice an hour.

The bird is perched on the nest, a large twig structure with an external entrance tube that can, in some cases, be up to 30 cm long. Sooty-fronted Spinetails feed low down in the undergrowth of clearings and along the borders of deciduous forest and riparian woodland in arid areas.

They capture prey by gleaning from low foliage and probably the ground. This species has a large range in eastern South America and is not considered to be at any risk.

[*Synallaxis frontalis*, Minas Gerais, Brazil. Photo: Anita Studer]

nest types provide an unusual degree of physical protection. Whitney and colleagues suggested that domed stick nests arose early in ovenbird evolution, during arid climate phases in south-central South America, in response to the need for protection of nests from wind, sun and cold, and from predators, and because of the absence of other nesting materials. It is tempting to propose that the extraordinary breadth in habitat use by the members of this family is related to this unifying theme of nest protection. Of all passerine nests, those of ovenbirds must rank near the top in the degree of protection that they provide for

delicate eggs and nestlings, sheltering them from the hostile weather extremes faced by many species in terms of heat and cold, aridity and torrential rainfall, constant mist, high winds, and even salt spray. Perhaps this is a key reason why, whether one visits Tierra del Fuego, the Atacama Desert, Cerro Aconcagua in the Andes of west Argentina, or the Chocó region of north-west Colombia, ovenbirds are among the most likely passerines to be encountered.

As might be expected for a family the members of which conceal their eggs within cavities or domed nests, the eggs of



Perched at the nest entrance, and using its tail for support, this **Rufous Hornero** offers a sizeable arthropod to one of its large young. The nest has been constructed with the interior wall aligned differently, putting the entrance at the top, instead of, as with many of the nests of this species, at the side. The breeding biology of this furnariid has been well studied. The Rufous Hornero breeds in the austral spring and summer, with nestlings recorded in all months from October to January; double-brooding is common. The mates share incubation, brooding and chick-feeding duties. Incubation takes 14-18 days and is followed by a nestling phase lasting 3-4 weeks. Juveniles stay in the parents' territory for 4-9 months, but play no part in subsequent nesting attempts.

[*Furnarius rufus rufus*, Salado's Depression, Buenos Aires, Argentina. Photos: Yves Bilat]



During the brood-feeding stage of the breeding cycle, adult **Buff-browed Foliage-gleaners** gather food (Top) while the young chicks wait patiently in the nest (Below). Recorded food items of this species include tent caterpillars, which may well be what the bird in the upper photo has captured. This foliage-gleaner feeds primarily low down in the understorey, but also ranges to the subcanopy and, sometimes, down to ground level. As well as gleaning arthropods from branches, dead leaves and debris and epiphytes, it occasionally hammers on branches. The nest-site shown in the lower photograph, a hollow in a bamboo stem, is typical of a species that will, it seems, adopt any suitable cavity, such as old woodpecker holes or other holes in trees or in walls, and the hollow interior of pipes. Inside the cavity the birds build a shallow cup of twigs. The individual perched at the mouth of this nest is clearly identifiable as a young bird by the obvious pale gape-flanges on the side of the bill base. It is almost fully grown and on the verge of leaving the nest. The Buff-browed Foliage-gleaner has a curious distribution, occurring in two disjunct populations with different habitat requirements. One lives in the montane forests of the Andes from southern Ecuador south to north-west Argentina, and the other is found in the humid lowland forests of south-east Brazil and adjacent areas of Paraguay, Uruguay and Argentina. Of the four subspecies, two occur in each of these two regions. Both of those shown here are individuals from the lowland populations: the adult in the upper picture is of the race *acrita*, with a juvenile of the nominate race in the photo below.

[Above: *Syndactyla rufosuperciliata acrita*,  
Uruguá-i Provincial Park,  
Misiones, Argentina.  
Photo: José & Adriana Calo

Below: *Syndactyla rufosuperciliata rufosuperciliata*,  
Cantareira,  
São Paulo, Brazil.  
Photo: Edson Endrigo]







The removal of a faecal sac from the nest by this emerging adult **Pinto's Spinetail** is a good indication of the presence of nestlings, as well as being an essential operation for maintaining nest hygiene. Faecal sacs are either dropped away from the nest or swallowed by the parent bird. The nest of this Critically endangered and poorly known species has not been formally described, but this structure appears to consist of a mass of sticks, perhaps with an external entrance tube, placed low down in dense vegetation. As such, it is typical of those built by many other members of the genus *Synallaxis*.

[*Synallaxis infuscata*,  
Alagoas, Brazil.  
Photo: Anita Studer]

ovenbirds are typically white, those of some species, such as certain *Synallaxis* spinetails, having a bluish tinge and others a greenish or buff tinge. The eggs of the Wren-like Rushbird are deep greenish-blue to turquoise. Patterned eggs have not been recorded. Many ovenbirds are frequent hosts for some avian brood parasites, primarily the American Striped Cuckoo (*Tapera naevia*) and the Shiny Cowbird (*Molothrus bonariensis*). Indeed, *Synallaxis* spinetails and the Yellow-chinned Spinetail are among the primary hosts for the Striped Cuckoo in some areas. The eggs are laid on alternate days, at least in the few species for which data are available.

Clutch size in the Furnariidae exhibits a typical pattern of geographical variation. It is usually two or three in the lowland tropics, whereas species occurring at subtropical or temperate latitudes often lay up to five or more eggs. The Buffy Tuftedcheek possibly lays only a single egg, but this is based on a sample of just one nest. A crucial gap in the knowledge of clutch sizes in the family concerns the many species of the humid Andes, where, although the latitude may be tropical and seasonality minimal, the high elevation makes the climate often quite cold. Do these species have small clutches, as lowland tropical species, or do they lay larger clutches, as those species from more extreme latitudes? This question transcends the Furnariidae, of course, and remains a major lacuna in empirical data that is an obstacle to an understanding of patterns in clutch size. Even for better-known regions, sample sizes for most species are sufficiently small that all statements on clutch size should be regarded with caution.

Data on incubation periods are limited largely to a few examples for under 20 species. The range is from 14 to 22 days, with some tendency for larger species to have longer incubation periods. The 14-day period is for the Tufted Tit-spinetail, whereas the Brown Cachalote, the Buffy Tuftedcheek, the Buff-throated Foliage-gleaner and the Scaly-throated Leaf-tosser are amongst those recorded as incubating for periods of 20 days or more. Skutch found that incubation constancy by the Slaty Spinetail

was 91% during 22 hours of observation at two nests, with the longest period of "egg neglect" being 48 minutes; incubation shifts averaged about 30 minutes for each member of the pair. Data for other species, such as the Rufous Hornero, the Rufous-breasted Spinetail, the Brown Cachalote, the Buff-throated Foliage-gleaner and the Scaly-throated Leaf-tosser, are similar, but with lower incubation constancy, as low as 58% in the case of the foliage-gleaner. At nests of both the Slaty and the Rufous-breasted Spinetails, change-overs are often accompanied by the addition of new downy leaf fragments or spider webs to the nest lining. Eggs of the Rufous Hornero hatch asynchronously, at intervals ranging from 6 to 48 hours. Otherwise, nothing is known of hatching patterns.

The altricial nestlings of ovenbirds are typical of those of the order Passeriformes. The chicks of some species, such as the Rufous Hornero, are naked on hatching, whereas those of others have grey down, this being either sparse, as for instance on hatchlings of the Little and Freckle-breasted Thornbirds, or dense, such as on chicks of the Wren-like Rushbird and the Firewood-gatherer. The eyes of Rufous Hornero and the Scaly-throated Leaf-tosser chicks are fully open in nine days. Nestlings of the Plain Xenops become fully feathered in nine days, but the process takes longer for larger species, such as the Rufous Hornero, the chicks of which are feathered in about 16 days. Nestling Rufous Horneros and Yellow-chinned Spinetails are reported as making hissing noises like snakes and to strike outwards as a means of defending themselves. Older nestlings of most species studied emit loud begging calls. The adults deliver food items to their young at rather slow rates, rarely more than once or twice per hour. They remove the chicks' faecal sacs or swallow them, but hole-nesters, if the example of the Scaly-throated Leaf-tosser is typical, neglect sanitation after the nestlings are old enough to come to the nest entrance for food. Quantitative studies of the growth rates of young ovenbirds are non-existent. The nestlings of several furnariids are attacked by botfly larvae (Gasterophilidae).





From the limited information available, a typical nest-site of the **Campo Miner** is within the burrow of an armadillo (*Dasypodidae*), such as that seen in the left foreground of the upper photo. This furnariid appears to have very specific breeding-habitat requirements, seemingly nesting principally, or perhaps exclusively, on recently burned campo and cerrado grasslands. The grassland surrounding this nest-site had been burned six weeks previously and is about 15 cm tall; it contains few trees or bushes and is broken only by the occasional low termite (*Isoptera*) mound. The adults, which forage on the ground, capture a variety of arthropods, such as mantids, spiders and beetles, and these will be presented to the well-feathered young shown in the lower right-hand picture. The age of these nestlings, here huddled in the nest-chamber 30-50 cm below ground, indicates that the parents must have arrived and set up territory very quickly after the grassland was burned. In fact, some birds appear at burns while the ground is still smoking. This species must be capable of rapid dispersal to suitable breeding areas, sometimes over long distances, but its movements remain something of a mystery. Its conservation status is currently considered to be that of Near-threatened and, bearing in mind that the species has such specific requirements, it is unlikely to be downgraded in the near future. Indeed, the Campo Miner may well become more threatened as its favoured habitat is increasingly converted to mechanized farmland.

[*Geositta poeciloptera*  
and habitat,  
Serra da Canastra  
National Park,  
Minas Gerais, Brazil.  
Photos: Dante Buzzetti]





The **Uniform Treehunter** is a restricted-range species, occurring only in the Chocó Endemic Bird Area (EBA) of western Colombia and north-west Ecuador. This incredible area of Pacific-slope wet forest is well known for its extraordinarily high biodiversity and, unsurprisingly, contains the largest number of restricted-range species of any EBA in the Americas. Within this region, the Uniform Treehunter is found in mostly montane forest and is considered not to be at risk. Threats to the forested habitats in the region include logging, which has drastically reduced habitat availability, especially in the lowlands, and has encouraged human colonization and associated problems.

[*Thripadectes ignobilis*, 4 km SSW of Chical, Carchi, Ecuador. Photo: Doug Wechsler/VIREO]

The duration of the nestling period is known for some 15 species of furnariid. This ranges from 13 days in the case of the Plain Xenops to at least 29 days in the Buffy Tuftedcheek. Again, larger species tend to have longer nestling periods, those such as the Blackish Cinclodes, the Rufous Hornero and the Brown Cachalote being near the longer end of the range, with small species, such as the Tufted Tit-spinetail and the Rufous-breasted and Slaty Spinetails, near the shorter end.

Although ovenbird nests are such as to discourage many predators, they are not impregnable. Snakes, through their agility, are the main predators. The Guira Cuckoo (*Guira guira*) occasionally enters nests of Rufous Horneros and eats the eggs or young. Similarly, some raptors, such as the Roadside Hawk (*Buteo magnirostris*) and the Black-chested Buzzard-eagle (*Geranoaetus melanoleucus*), occasionally attack them and successfully extract nestlings. Distraction displays, such as the "broken-wing", to lure predators away from nests have not been documented in the Furnariidae.

The length of the post-fledging dependency period is difficult to determine. This is because young of the year often accompany the parents, or remain in their territories, for extended periods, beyond the time when they can forage for themselves. Fledged Slaty Spinetails, for example, feed themselves competently within about 30 days of leaving the nest, but they occasionally accept meals from the parents until at least 45 days. Young Firewood-gatherers remain with their parents for three to four months after fledging, and they sleep with them in the nest at night. The independent young of the Rufous Hornero stay within the parental territory for four to nine months; they may attempt to help with nest-building, but are attacked by the parents when they do so. Likewise, juvenile Brown Cachalotes remain in the territory for five to 13 months, although they do not assist with any subsequent breeding attempts. For many other furnariids, foraging groups of more than two individuals are frequently observed; these almost certainly involve independent young accompanying the parents.

Data on nesting success are scarce. Fraga found that, of 115 Rufous Hornero eggs, 72% produced fledglings, with starvation of the youngest nestling being the primary cause of mortality; this, however, was in heavily disturbed habitat with few nest predators. Nores and Nores found that 59% of 177 eggs

produced fledglings, predation accounting for two-thirds of the mortality. In studies by Skutch, only three of 13 nests of the Slaty Spinetail produced offspring, whereas only two of nine Rufous-fronted Thornbird nests were successful. Before any generalizations can be made about ovenbird nesting success, detailed studies in more natural, undisturbed habitats are required.

Demographic data exist for only one furnariid, the Rufous Hornero. Mason found that the annual adult survival rate of this



**Olog's Cinclodes**, described as recently as 1979, is apparently confined to a small group of mountain ranges in west Córdoba and north-east San Luis, in north-central Argentina. These mountains are classified as an Endemic Bird Area and are home to another restricted-range member of the genus, the Córdoba Cinclodes (*Cinclodes comechingonus*). Both of these furnariids favour the same habitat, that of grassy and rocky areas with patches of *Polyplepis* woodland, and, as many of their genus, they often occur near water. Neither is considered at risk, however, because the area is not threatened by human activity and overgrazing is perhaps the only potential threat.

[*Cinclodes ologi*, La Cumbrecita, Córdoba, Argentina. Photo: Juan Diego Döke]



The enigmatic **Great Xenops** is currently classified as a Near-threatened species.

It has a large range through the interior of eastern Brazil, where it is resident in caatinga, semi-humid woodland and forest.

Although it appears able to tolerate quite high levels of disturbance, it has suffered badly from the rapid and ongoing clearance of forest for agriculture and charcoal production that has taken place in the region.

It is still a poorly known species. Although its bill morphology suggests a connection with *Xenops*, this is the only similarity with that genus. Otherwise, its foraging behaviour indicates a possible link with the *Syndactyla* or *Philydor foliagleaners*, but even they are clearly not close relatives.

[*Megaxenops paraguayae*,  
Lagoa Grande,  
Pernambuco, Brazil.  
Photo: Kevin J. Zimmer]



species in Argentina was about 71%. Otherwise, even anecdotal records of longevity are virtually non-existent.

## Movements

The vast majority of the species in the Furnariidae appear to be permanent residents within their ranges, and perhaps even within individual home ranges. In the absence of data on ringed birds and of year-round studies, however, this is largely an assumption based on a lack of evidence to the contrary.

Long-distance migration is inferred from seasonal distributions for eleven species of the genera *Geositta*, *Upucerthia*, *Cinclodes*, *Phleocryptes*, *Leptasthenura* and *Asthenes*, all of them breeding in southern South America. These appear to be absent from certain areas during the non-breeding season, but present in others only during that season. Long-distance movement is also suspected in one population of the genus *Synallaxis*, the subspecies *australis* of the Pale-breasted Spinetail.

Although the migratory Common, Short-billed (*Geositta antarctica*) and Rufous-banded Miners, and the equally migratory Bar-winged, Cordoba, Grey-flanked and Dark-bellied Cinclodes, have long wings and strong flight capabilities (see Morphological Aspects), other migrants in the family do not. The Scale-throated Earthcreeper, Wren-like Rushbird, Plain-mantled Tit-spinetail and Sharp-billed Canastero have relatively short, rounded wings that would seem to make them unlikely candidates for longer movement.

None of the migratory furnariids is known to migrate more than a few hundred kilometres. Unless the southernmost race *australis* of the Pale-breasted Spinetail is found to move to Amazonia, none of them crosses the equator, unlike some of the austral migrant tyrant-flycatchers, cuckoos and *Sporophila* seedeaters. Moreover, no ovenbird is known to abandon the entire breeding range during the non-breeding season, and in virtually all migratory species some portion of the breeding population is suspected of remaining even at the extreme latitudes of the breeding range.

A number of furnariid species of southern South America are known to make downslope movements after breeding, abandoning the upper elevational portion of their distributions. Many

species of the *puna* zone have also been recorded as temporary downslope refugees during heavy snows. For example, during a particularly severe snowstorm in the Andes of southern Peru, J. O'Neill and Parker counted Bar-winged Cinclodes flying downhill at a rate of about two per minute, and they found substantial numbers of Streak-throated Canasteros and Junin Canasteros (*Asthenes virgata*), hundreds of metres below their normal elevational distribution, among groups of birds that had clearly fled from higher, snow-covered elevations.

It is widely assumed that the migration of ovenbirds is diurnal, and no direct observations of nocturnal movement exist. Further, no studies have been conducted on migration physiology in the Furnariidae. Subcutaneous fat levels in ovenbirds are typically at the low end of any scale, but information on seasonal variation remains to be published. A wealth of data on fat levels resides on the labels of modern museum specimens, but has yet to be analysed.

Some ovenbirds are more widespread in the winter season, presumably a reflection of short-distance dispersal. Flocks of Plain-mantled Tit-spinetails move among oases that may be separated by as much as 50 km of almost barren desert.

One species, the Campo Miner, is essentially nomadic in that it moves from one burned grassland area to another, and apparently requiring recent burns for breeding habitat. The distances involved in these movements are unknown, but they must at times be considerable. This species is known to appear at burns so recent that the ground is still smoking.

Although the Furnariidae have few migratory species, the family does contain some lineages that reveal a capability for crossing substantial barriers to dispersal, including oceans. Two oceanic islands are inhabited by resident furnariids that almost certainly arrived there by means of transoceanic dispersal. The Falkland Islands have an endemic subspecies, the nominate race, of the Blackish Cinclodes; these islands are at least 325 km from the closest point in South America, the continental island of Staten. Even more spectacular is the presence of the endemic Masafuera Rayadito on the island of Alejandro Selkirk, in the Juan Fernández group, about 730 km west of the nearest point on mainland Chile. The same archipelago, which is of volcanic origin and estimated to be 1-6 million years old, also supports the subspecies *baeckstroemii* of the Grey-flanked Cinclodes, which occurs elsewhere only on neighbouring Robinson Crusoe



Another Near-threatened ovenbird is the **Rusty-headed Spinetail**, which is found only in the Santa Marta Mountains of northern Colombia.

Here, it occurs in dense montane tangles and thickets. Despite the designation of the entire area as a national park, serious habitat degradation has taken place, and as little as 15% of the natural vegetation now remains unaffected. Agricultural expansion, logging and burning have all taken their toll, and could ultimately threaten the future of this furnariid and of the 14 other bird species endemic to this mountain range.

[*Synallaxis fusciorufa*,  
Cordillera de Santa Marta,  
Colombia.  
Photo: J. Dunning/VIREO]





The **Red-shouldered Spinetail** is a Near-threatened resident of the dry lowland caatinga formations in north-east Brazil, where it skulks near the ground in the low scrub and undergrowth. Caatinga consists of a variety of semi-desert and dry deciduous forest types, all of which lack grass cover. Human pressure in the region is intense, with agricultural expansion, grazing, hunting and burning all resulting in ongoing habitat removal and degradation. This is reflected in the fact that all five species restricted to this Endemic Bird Area are considered to be at some sort of risk. The situation is not helped by the inadequate protected-area network that covers this bioregion of Brazil.

[*Gyalophylax hellmayri*, Lagoa Grande, Pernambuco, Brazil. Photo: Kevin J. Zimmer]

Island, or Más a Tierra, some 560 km from the Chilean mainland. Although the genus *Cinclodes* has several species that are excellent fliers and are regularly noted as wanderers, the only other *Aphrastura* species, the Thorn-tailed Rayadito, has short wings and is not suspected of making any movements greater than local wandering.

A further indication of the general sedentary nature of most species of ovenbird is the scarcity of records of extralimital wanderers. The Bar-winged *Cinclodes* alone is responsible for almost all such records.



### Relationship with Man

With their dull plumage, unremarkable voices and often secretive or, at least, inconspicuous behaviour, it is no surprise that ovenbirds do not in general figure prominently in local cultures or legends. Representing yet another range in extremes in the Furnariidae, however, the Rufous Hornero is possibly the bird species more familiar to more South American people than is any other. With its large and unusual nests often placed directly on human-made structures such as fence posts and telephone poles, and on attention-catching spots such as cow skulls and large cans, and with its abundance in human-modified and human-created habitats, including cities and towns, the Rufous Hornero makes itself well known to human neighbours. Frequently mentioned in Argentine poetry and literature, it is the national bird of Argentina, as well as the namesake of that country's leading ornithological journal, *El Hornero*, one of the oldest and most prestigious ornithological publications in Latin America. The loud, explosive duetting behaviour of mated Rufous Horneros further highlights this ovenbird's presence and "personality". Thus, colloquial names for the species are numerous, as are local legends about it and its nests. According to H. Sick, in Brazil, the occasional sealed nest has led to the legend that males will seal up and entomb unfaithful females in the nest. Members of the Caxiuanã tribe credit the Rufous Hornero with teaching their ancestors how to make clay pots.

Although lacking the charisma of the Rufous Hornero, the Bar-winged *Cinclodes* competes for the honour of being one of the small birds most familiar to South American people. Virtually ubiquitous in the higher and drier portions of the Andes, a region with one of the highest human population densities on the continent, both historically and currently, the Bar-winged *Cinclodes* is perhaps the most likely passerine to be seen in much of the non-forested Andes. Its affinity for foraging along tiny ditches and in puddles, irrigation channels and muddy spots, as well as its usually confiding nature, makes it a well-known species to all people of agricultural areas of the puna zone and the Altiplano region.

Perhaps no ovenbird is so familiar to a local human population as is the Blackish *Cinclodes* to the inhabitants of the Falkland Islands. As described by O. S. Pettingill, this furnariid shows the classic insular syndrome of a lack of fear of humans coupled

Because of its small geographical range and the threats to its habitat, the **White-throated Barbtail** is listed as Vulnerable by BirdLife International. It is found in two small mountain ranges in northern Venezuela, where it forages among epiphytes in the understorey of humid montane forest. In the past, conversion to agriculture and pastureland has reduced the area of forest, and this is continuing, even within the two national parks that encompass much of the species' current range. All six furnariid species largely confined to these mountains are at risk, and the protection offered by the national parks in the region must be improved to ensure their survival.

[*Premnoplex tatei*, Paria Peninsula National Park, Venezuela. Photo: Martin Vestergaard]



Although fairly widespread, the **Campo Miner** is currently considered Near-threatened owing to threats to its cerrado habitat, a tall-grass savanna formation, in south-central Brazil and north-east Bolivia. It appears to be a semi-nomadic specialist, seeking out recently burned open grassland, and has no doubt been adversely affected by the cessation of burning in some areas. Other threats are more typical and include the conversion of cerrado to agriculture, pasture and forestry, activities that have detrimentally affected over two-thirds of this miner's habitat.

[*Geositta poeciloptera*,  
Serra da Canastra  
National Park,  
Minas Gerais, Brazil.  
Photo: Edson Endrigo]



with dramatic flexibility and adaptability in foraging behaviour. Blackish Cinclodes will follow beachcombers to glean food exposed by the disturbance. They will readily take food offered by hand, and will enter open windows to steal food from tables.

No ovenbird has been a victim of direct human exploitation. Again, this is not surprising, given the absence in the family both of large or colonial-nesting species that would be potentially exploitable for meat or eggs, and of melodious or beautiful species that may be desirable as cagebirds. This fact, along with the largely arthropod diet of these birds, also explains why no furnariid species has been domesticated or has become prominent in aviculture.

Ovenbirds pose no threat to any agricultural grains or fruits. In fact, because of their diet, they would appear to be beneficial to farmers. Thus, the vast majority of furnariids do not harm humans or their interests in any way. Perhaps the only exception is the problem created by the heavy nests of the Rufous Hornero and the Firewood-gatherer when they are placed on electrical equipment and support poles. According to Sick, one study in southern Brazil revealed that, of 580 nests of Rufous Horners placed on utility poles and equipment, more than 45% were positioned in a way that created a risk of short-circuiting the system. In the same area, the nests of Firewood-gatherers cause even more damage to electrical systems, particularly because this species frequently incorporates wire and other metal into the nest (see Breeding). The only other example of damage caused by ovenbirds is the anecdotal reports of the occasional eating of chicken eggs by the Brown Cachalote.

### Status and Conservation

Of the 236 species of furnariid, 26, equivalent to 11%, are considered by BirdLife International to be globally threatened. The conservation status of three of these is regarded as Critical, with nine Endangered and 14 Vulnerable. In addition, the subspecies *huancavelicae* of the Creamy-breasted Canastero, treated by some as a separate species, is classified as Vulnerable.

Of the 26 threatened ovenbirds, four live in humid forest remnants of eastern Brazil. They include two of the three Critical species, Pinto's Spinetail and the Alagoas Foliage-gleaner, the other two being the Bahia Spinetail (*Synallaxis cinerea*) and

the Pink-legged Graveteiro. A further three, the Blackish-headed Spinetail (*Synallaxis tithys*), the Rufous-necked Foliage-gleaner and the Henna-hooded Foliage-gleaner, inhabit deciduous forest of south-west Ecuador and north-west Peru. Similarly, arid scrub in the Marañón Valley of Peru is home to the Marañón Spinetail (*Synallaxis maranonica*), the Great Spinetail and the Chestnut-backed Thornbird, all classified as Vulnerable. Humid forest in south-eastern Brazil and *Polylepis* woodland in the Andes each hold two globally threatened species. The Striated Softtail and the Canebrake Groundcreeper occur in the



As the **Masafuera Rayadito** is restricted to one small island in the Juan Fernández group, off the coast of Chile, where its population was estimated at fewer than 150 individuals in 2002, it is not surprising that its conservation status is that of Vulnerable. It occurs in dense tree-fern forest along watercourses. Since all forested habitats have already been cleared from lowland parts of the island, the Masafuera Rayadito is restricted to the hill forest.

As is typical on oceanic islands, introduced species pose the main threat, and trampling by goats could be opening up the forest and causing habitat fragmentation. Fencing, or even the culling of the goats, may have to be considered.

[*Aphrastura masafuerae*,  
Alejandro Selkirk Island,  
Juan Fernández Islands,  
Chile.

Photo: Ingo Hahn]



former, and the Royal Cinclodes, classed as Critical, and the White-browed Tit-spinetail are inhabitants of the latter.

The remaining twelve threatened species are somewhat scattered geographically and ecologically. Of these, the Hoary-throated and Russet-bellied Spinetails, the Bolivian Spinetail, the Russet-mantled Softtail and the Cipo Canastero are listed as Endangered. The conservation status of the White-bellied Cinclodes, the Masafuera Rayadito, the Perija Thistletail, the Apurimac Spinetail, the Orinoco Softtail, the White-throated Barbtail and the Bolivian Recurvebill is Vulnerable.

A further 17 furnariids are considered Near-threatened. In addition, the subspecies *dissita* of the Rusty-backed Spinetail, confined to Coiba Island, in Panama, and sometimes treated as a full species, is currently regarded as Near-threatened.

The global population of the Royal Cinclodes is extremely small, possibly no more than a few hundred individuals. Indeed, it was believed to total fewer than 250 birds in the year 2000. This ovenbird has been recorded at only six localities in the Andes. Although two of these are in officially protected areas in Bolivia, at Puina, in the Madidi National Park, and in the Ilampu Valley, in the Cotapata National Park, even there they are at risk. *Polylepis* woodland throughout the Andes has been severely fragmented by the effects of human exploitation, and there is mounting evidence that the total area of this special habitat has been reduced dramatically during the last few thousand years. Losses have been particularly severe in the latter decades of the twentieth century. The remaining patches of *Polylepis* in Cuzco and Apurimac, in Peru, are not officially protected and are still being burned to improve pastures; widespread cutting for firewood is also leading to further degradation. Moreover, uncontrolled fires and grazing prevent the regeneration of woodlands. The Royal Cinclodes was almost certainly much more widely distributed at one time. Whether it can survive for much longer is dependent on the ability of humans to treat with due seriousness the importance of protecting its habitat and maintaining effective conservation measures.

The two other furnariids considered to be at the greatest risk of extinction are both confined to Alagoas, in north-east Brazil. One of these, the Alagoas Foliage-gleaner, not described until 1983, has so far been observed at just a single site, Murici. When first found, it was said to be relatively easy to locate in the existing lowland evergreen forest, which covered an area of

8500 ha. Later surveys, however, failed to confirm that this species was in any way common; indeed, the foliage-gleaner was not seen at all between 1992 and 1997. A single individual was recorded in each of the following two years, and four were found in 2000. By then, the forest in which this ovenbird lives had been greatly reduced, and is currently thought to survive only as a remnant patch of about 1500 ha. Even this small fragment, despite legal protection, is subject to cutting and uncontrolled fires. The total population of the Alagoas Foliage-gleaner is estimated at fewer than 250 individuals, and is declining rapidly as a result of habitat destruction. Unfortunately, the forest at Murici is privately owned, and several conservation initiatives aimed at preventing further loss of habitat have proved unsuccessful. If this species is not to become extinct, it is considered essential that protection measures at Murici be enforced and that the forest be afforded reserve status.

Although certainly more numerous than the previous species, Pinto's Spinetail is nevertheless placed in the same category with regard to its conservation status. Its range in Alagoas is tiny, not much bigger than that of the Alagoas Foliage-gleaner, and it, too, is declining in numbers owing to the rapid deforestation in the region. Although it appears to be locally fairly common, it has been recorded in recent years at only a couple of localities. One of these is Murici, where the problems are those outlined in the preceding paragraph. Fortunately, Pinto's Spinetail is also present in the Pedra Talhada State Park, where a programme of replanting is helping to restore the forest; this reserve is protected by law and patrolled by guards, whose efforts at enforcing the law are evidently supported by the local people and appear to be largely successful. On the other hand, it is of concern that this species has apparently not been observed in recent decades at any other sites. It was recorded in 1980 in the Salinho Biological Reserve, in the adjoining state of Pernambuco, and there are earlier records from the UFPE Ecological Station and other localities in both Alagoas and Pernambuco. The current population of Pinto's Spinetail is believed to be in the range of 1000-2500 individuals, but is thought to be declining.

As so many ovenbirds exhibit a narrow habitat specialization (see Habitat), many species that do not appear on "official" lists of species of concern nevertheless have vulnerably small populations. The linear nature of their habitat ensures that the



**The White-bellied Cinclodes** is currently found in just two areas of extreme high-altitude boggy terrain in the puna of central Peru, where it is rare and local. Its distribution suggests that it has very specific ecological requirements, and it appears to live only in mineral-rich, wet Distichia bogs with nearby rocky outcrops and stony slopes, conditions sometimes found below glaciers in the region where it occurs. The tiny size of both its range and its known population gives cause for concern, but actual threats are few. Nevertheless, planned mining operations, if carried out, would almost certainly adversely affect the future of this Vulnerable species.

[*Cinclodes palliatus*, Curicocha, Junín, Peru. Photo: Alejandro Tello]



The **Hoary-throated Spinetail** is another threatened furnariid with strict habitat demands. It is restricted to gallery forest along the headwaters of the Rio Branco, in northern Brazil and extreme western Guyana. Until recent years this rare species remained unobserved, and it is still poorly known. It has been recorded from just a few sites, where it appears to frequent the dense understorey of seasonally flooded gallery forest within 500 m of the river. Its tiny range and the linear nature of its habitat combine to produce a population estimate of fewer than 1000 individuals. The major threat to this Endangered species may be uncontrolled burning and the development of rice cultivation.

[*Synallaxis kollari*,  
Rio Uraricoera,  
Roraima, Brazil.

Photo: Arthur Grosset]



total area of that habitat and, consequently, the bird populations that it supports are much smaller than would be suspected from inspection of range maps or statements on distribution. Conservation biology in general does not adequately address the problem of linear habitats. For example, the many species of ovenbird restricted to the successional stages of major Amazonian rivers must have tiny populations by comparison with those of other habitats, because the band of suitable habitat at any one river margin may be so narrow that it is capable of supporting only

one territory. If the true width of the range of such species were faithfully indicated on maps, it would be too small to be visible. Furthermore, for the riverine and, especially, the river-island specialists, suitable habitat is seldom, if ever, continuously distributed in the "long axis" dimension of the geographical range, thereby compounding the tendency to overestimate the area of suitable habitat.

This problem of linear habitats and their inherently small bird populations is masked by our natural tendency to illustrate ranges

First discovered as recently as 1985, the **Cipo Canastero** is restricted to a small area of campos in the Serra do Cipó region of south-east Brazil. It occurs around rocky outcrops and associated shrubby vegetation within grassland, is known from just half a dozen sites, and is considered to be Endangered. Threats include fire, often used as a management tool to clear new pastureland, and the potential impact of brood parasitism by the Shiny Cowbird (*Molothrus bonariensis*), a new colonist. Recent fieldwork, however, indicates that this canastero may be more widespread than was thought. Further surveys should help to clarify the species' range and allow an accurate assessment of its status.

[*Asthenes luizae*,  
Serra do Cipó,  
Minas Gerais, Brazil.  
Photo: Edson Endrigo]







Substrate specialization and the fact that the species is known from only seven sites in an area of coastal Brazil that has suffered near-total deforestation combine to make the future prospects of the **Striated Softtail** rather uncertain. This furnariid is considered to be Endangered. It is confined to the Atlantic Forest Lowlands EBA, where it is seldom found far from the dense subcanopy vine tangles that occur in its favoured primary and infrequently disturbed secondary forests. Habitat destruction is still rife, and constitutes the biggest threat to the species. Ensuring the continued protection of the two reserves in which the softtail is known to occur may be important for its future survival.

[*Thripophaga macroura*,  
Bôa Nova, Bahia, Brazil.  
Photo: Kevin J. Zimmer]

by "filling in" areas on maps with continuous shading. Besides riparian zones, another example that affects ovenbirds is the linear nature of the timber-line ecotone on the humid slope of the Andes. The matrix of grass, shrubs and stunted trees at the interface between cloudforest and treeless high-elevation habitats naturally exists over a narrow elevational zone. The ovenbirds that seem largely restricted to this ecotone include all of the *Schizoeaca* thistletails, the Line-fronted, Many-striped, Junin and Scribble-tailed Canasteros, and possibly the Tawny Tit-spinetail, and the Itatiaia Spinetail is confined to a similar ecotone in south-east Brazil. Although the ranges of such furnariids may span hun-

dreds of kilometres of latitude, the band of suitable habitat is so narrow that the total populations of species restricted to this ecotone are surely also small. As recently shown by M. Kessler and S. Herzog, this ecotone has been narrowed even further by human activity, particularly burning and grazing.

On a broader scale, all species restricted to natural, relatively undisturbed habitats is, of course, declining as these habitats are converted to human use, and all are, in effect, endangered over the longer term. Whether the few reserves established in South America can support viable populations of these species is unknown. At one end of this scale are the species found in those



One of the most threatened of all ovenbirds is **Pinto's Spinetail**, a Critically endangered species at real risk of extinction in the short term. It is restricted to an area of less than 80 km<sup>2</sup> in the coastal forest of Alagoas and Pernambuco, in north-east Brazil, a region that has only 2% of natural forest cover remaining and where one bird species has already become extinct in the wild. The spinetail is currently known from perhaps three sites, only one of which is under beneficial conservation management. Elsewhere, initiatives have so far failed to deliver habitat improvement for this species and forest loss continues.

[*Synallaxis infuscata*,  
Alagoas, Brazil.  
Photo: Anita Studer]



Over time, the use of fire for land management, coupled with heavy grazing, has prevented the regeneration of the Polylepis woodland and montane scrub that is the habitat of the **Royal Cinclodes**. This species' distribution in the Andes of south-east Peru and west Bolivia is now very fragmented. Fewer than 250 individuals survive, and these are threatened by continued habitat loss.

It is little wonder that this species is Critically endangered. Its future is likely to depend on action taken at community level, aimed at segregating agricultural, grazing and forest areas, replanting of Polylepis woodland, and the planting of buffer woodlands as alternative sources of firewood.

[*Cinclodes aricomae*,  
Abra Málaga, Peru.  
Photo: Barry E. Wright]



forested areas where the percentage of remaining habitat is small, namely the Atlantic Forest region of eastern and south-eastern South America, the deciduous forest of the Tumbesian region of north-west Peru and south-west Ecuador, and the cloudforests of the northern Andes.

In every case of threatened or declining populations of furnariids, anthropogenic habitat destruction or degradation is the principal cause or primary threat. Deforestation, conversion of wildlands to agriculture, or degradation through grazing or fragmentation are, as expected, the primary agents of habitat destruction. For a family of generally small birds suffering no direct commercial exploitation, and with only two oceanic islands having members, it seems likely that the figure of 11% of all furnariid species considered threatened is unusually high. This almost certainly reflects the narrow habitat and foraging restrictions that characterize many species in the family, which in turn leads to small geographical ranges, and to the high percentage of species that are sedentary, thereby facilitating differentiation and speciation.

Even those ovenbirds with relatively large ranges or broad habitat preferences may suffer disproportionately dramatic population losses due to forest fragmentation or selective logging. In French Guiana, J. M. Thiollay has found that leaf-tossers, xenops, and *Philydor* and *Automolus* foliage-gleaners were among the species of small insectivores of interior forest that disappeared or declined dramatically after selective logging of tropical forests. A similar pattern of dramatic declines or total disappearance of common ovenbirds of interior forests from fragments has also been found by P. Stouffer, R. O. Bierregaard and colleagues near Manaus.

The degree to which habitat restriction and destruction can influence a species' ultimate survival is well illustrated by the situation of the Pink-legged Graveteiro. As outlined by Pacheco, Whitney and L. P. Gonzaga, this newly discovered bird is found only in the thinned canopy above cocoa plantations, which can be only a modified version of this bird's pristine habitat, now completely gone. Furthermore, this remnant population is probably at the precarious upper elevational limit of its former range, because all forest lower down has been removed. Thus, the graveteiro's survival relies completely on an anthropogenic habitat to which the bird has adapted to some extent, but the persistence of this habitat depends, for the present, on patterns of human land use, local profitability of cocoa plantations, and the global

market for cocoa. For example, a fungus that began to reduce cocoa production in the early 1990s has already caused plantation-owners to shift to other products and has led to the removal of some plantations in the region.

By contrast, ovenbirds are found in some of the most inhospitable habitats in South America, where human impact is minimal and is likely to remain that way. As a result, many furnariids in the genera *Geositta*, *Upucerthia*, *Cinclodes* and *Asthenes* are among the continent's bird species that are the least affected by anthropogenic activities. Others tolerate at least moderate overgrazing and light cultivation, and so persist or thrive in the highly disturbed inter-Andean valleys and Altiplano, where human civilizations have modified the landscape for thousands of years.

Those species in the Furnariidae that are increasing are, as expected, the ones that thrive in human-modified landscapes. Although quantitative data are lacking, the non-forest ovenbirds that flourish in human-created second growth and scrub, such as many *Synallaxis* spinetails and *Furnarius* hornbills, have almost certainly expanded their populations and ranges greatly within the last two centuries.

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PLATE 11

inches 3  
cm 8



# Genus *GEOSITTA* Swainson, 1837

## 1. Campo Miner

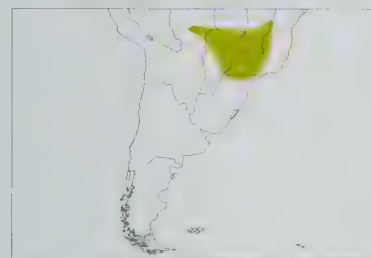
### *Geositta poecilopectera*

**French:** Géositte des campos **German:** Camposerdhacker **Spanish:** Minero Brasileño

**Taxonomy.** *Anthus poecilopecterus* Wied, 1830, "Inner Campos Geraës of Brazil" = Minas Gerais-Bahia border.

Often placed in a monotypic genus *Geobates* on account of slightly smaller size, shorter tail and bill, and bright cinnamon axillaries, but otherwise similar to current congeners in behaviour and voice. Plumage features and lowland distribution suggest related to *G. cunicularia*. Monotypic.

**Distribution.** Interior Brazil (locally from C Mato Grosso, S Goiás and C Bahia S to C Minas Gerais, São Paulo and N Paraná) and E Bolivia (extreme NE Santa Cruz).



**Descriptive notes.** 11-12 cm; 17-19 g. Small, short-tailed miner with bright rufous wing pattern and medium-length bill. Has crown dull greyish-brown with darker brown vague spots on centres of feathers, these becoming more elongated towards nape; supercilium buff, rest of face dull rufescent brown with vague darker flammulations; back dull greyish-brown, rump and uppertail-coverts tinged rufescent; lesser and median wing-coverts dark brownish with indistinct paler margins, indistinct wingbars, and blackish and rufous pattern on remiges (broad chestnut-rufous wingband); short tail slightly notched, rectrices nearly rounded, ru-

fous, blackish-brown subterminal band; throat whitish, contrasting with brown-freckled dull buff upper breast; lower breast and belly buff to whitish, flanks and undertail-coverts pale rufous; axillaries bright cinnamon; iris brown; upper and distal part of lower mandible dark horn or blackish, base of lower mandible pale horn or pinkish-grey; tarsus and toes pale brown to pale grey or dull pinkish. Differs from other members of genus in smaller size, shorter tail and bill, generally darker coloration, cinnamon axillaries. Sexes alike. Juvenile undescribed. **Voice.** Male song a repeated whistled "sweep" in display-flight; call "pit-pit".

**Habitat.** Campo grassland and treeless cerrado, especially where recently burned; 500-1250 m. Perhaps a specialist on recent burns, at least when breeding.

**Food and Feeding.** Arthropods; recorded items brought to nestlings are Hymenoptera, Coleoptera, mantids (Mantidae), spiders. Forages singly or in pairs. Food gleaned from ground.

**Breeding.** Nests found in Sept. Wing-raising display from termite mound and hovering aerial display recorded. Three nests known in detail, each evidently in side tunnel within armadillo (*Prionodontes maximus*, *Cabassous unicinctus*) burrow, nest-chamber lined with dead grass and hair; one contained 3 eggs. No further information.

**Movements.** Probably resident; as it appears so soon at burns, even when ground still smoking, must be highly vagile and capable of long-distance movements, but data lacking.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Generally uncommon to rare. Rare in Serra da Canastra National Park, in Brazil, and in Noel Kempff Mercado National Park, in Bolivia; in Brazil, occurs also in Das Emas National Park and Pedra Talhada State Park. Agriculturalization of campo and cerrado regions of Brazil pose substantial long-term threat to this species; its apparent restriction to these habitats, and especially to burnt areas, is considered by some to place it at risk, to the point that its conservation status may merit reappraisal.

**Bibliography.** Bates *et al.* (1992), Buzzetti (2003a), Cory & Hellmayr (1925), Ihering (1914), Killeen & Schulenberg (1998), Naumburg (1930), Parrini *et al.* (1999), Pinto (1978), Remsen (2003a), Ridgely & Tudor (1994), Sick (1993), Silveira (1998), Stotz *et al.* (1996), Willis (1992b).

## 2. Common Miner

### *Geositta cunicularia*

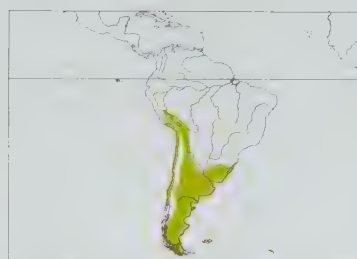
**French:** Géositte mineuse **German:** Patagonienerdacker **Spanish:** Minero Común

**Taxonomy.** *Alauda cunicularia* Vieillot, 1816, environs of Río de la Plata and in pampas of Buenos Aires, Argentina.

Plumage characters suggest closest relationship is with *G. poecilopectera*, *G. tenuirostris* and *G. antarctica*. Has been considered to form superspecies with *G. peruviana*, but this is unlikely. Vocal differences suggest that Andean races may constitute a separate species from lowland nominate race; *deserticolor* (with *georgei*) may represent another. Race *fissirostris* possibly indistinguishable from nominate. Racial identity of population in W Argentina (Salta S possibly to Mendoza) uncertain, presumed to be *hellmayri*. Distribution of races in need of careful review. Nine subspecies tentatively recognized.

#### Subspecies and Distribution.

*G. c. juninensis* Taczanowski, 1884 - Andes of C Peru (Junín, Huancavelica).  
*G. c. titicacae* J. T. Zimmer, 1935 - Andes of S Peru (Ayacucho to Puno), Bolivia (La Paz and Cochabamba to Potosí), N Chile (Tarapacá) and NW Argentina (Jujuy to Mendoza).  
*G. c. frobeni* (R. A. Philippi [Krumwiede] & Landbeck, 1864) - Pacific slope of Andes of S Peru (Arequipa to Tacna).  
*G. c. georgei* Koepeke, 1965 - coastal S Peru (S Ica, W Arequipa).  
*G. c. deserticolor* Hellmayr, 1924 - coastal S Peru (Arequipa) S to N Chile (N Atacama).  
*G. c. fissirostris* (Kittlitz, 1835) - C Chile from coast to Andes (S Atacama S to Llanquihué).  
*G. c. contrerasi* Nores & Yzurieta, 1980 - WC Argentina (Sierras Grandes, in Córdoba).  
*G. c. hellmayri* J. L. Peters, 1925 - Andes of C Chile (Malleco) and SW Argentina (C Neuquén to NW Chubut); presumably also this race in W Argentina (Salta and Tucumán S perhaps to Mendoza).  
*G. c. cunicularia* (Vieillot, 1816) - lowlands from E Argentina (S from S Córdoba and S Corrientes), extreme SE Brazil (SE Santa Catarina, Rio Grande do Sul), Uruguay and S Chile (S from Aisén) S to Tierra del Fuego.



**Descriptive notes.** 14-17 cm; 20-34 g. Medium-sized miner with medium-length bill, and conspicuous wing pattern. Nominata race has broad whitish supercilium, rest of face rather messy, pale brownish, vague darker postocular line and moustachial streak; crown and upperparts dull greyish-brown with indistinct pale edging, crown feathers with darker brown central spots, spots becoming more elongate towards nape; uppertail-coverts with pale brownish tips; wings mostly dull brownish, wing-coverts with dull pale buff tips, primaries with broad pale rufous area (broad wingband); tail slightly notched,

rectrices buff-whitish basally, blackish distally, with pale rufescent transition between pale and dark areas, extent of pale area increases laterally, outer web of outer rectrix nearly all white; throat whitish, breast buff-white with brownish wavy streaks, belly pale buffy whitish, flanks faintly tinged pale cinnamon, undertail-coverts whitish; iris brown to yellowish-brown; bill black to brown, sometimes pale base of lower mandible; tarsus and toes dark grey to black. Sexes alike. Juvenile undescribed. Races vary considerably in size and weight, also in paleness of plumage: *titicacae* is large, paler and more buffy than nominate, with paler, almost creamy tail base, less distinct breast streaking; *juninensis* is like previous but even paler and more buffy, almost without breast markings; *frobeni* has buffy white uppertail-coverts, almost whitish base of tail, whiter underparts than previous; *deserticolor* is like last, but smaller and paler overall, especially back, wingband, face and underparts, and uppertail-coverts are grey like back; *georgei* resembles previous, but darker wings and tail, pale yellowish-buff (not whitish) underparts, heavier breast spotting; *fissirostris* is very like nominate but slightly grayer above, whiter below, darker chest markings, more sharply defined terminal band on inner remiges; *hellmayri* resembles previous, but uppertail-coverts whiter, base of tail paler, chest markings paler; *contrerasi* is significantly smaller on average than last (but measurements overlap), wings and tail blackish, darker than other races, creamy buff below, well-defined dark brownish or blackish breast spots. **Voice.** Song a loud, shrill series of notes given in flight, "de-dirr-rr-rrr", nominate race more as "ta whit-ta whit". Flight call a high-pitched "keep" or rich, sweet "pip", nominate a nasal "deedijer" or "er?"; also trilled notes.

**Habitat.** Puna grassland, temperate grassland, and arid lowland scrub; sea-level to 5000 m. Found in a variety of open habitats, flat or gently sloping, with short grass, often with scattered shrubs and rocks, and often where soils disturbed, as along dirt roads; locally, sandy soils along coast, including *restinga* scrub. Distribution evidently patchy in many areas; perhaps restricted to places having sandy soil suitable for nest-tunnel construction.

**Food and Feeding.** Arthropods and some seeds; recorded items are Diptera and Coleoptera, including larvae. Forages solitarily or in pairs. Food gleaned from ground.

**Breeding.** Breeds generally during austral spring-summer; eggs in Sept-Dec in Chile and Argentina; nestlings in Oct-Nov in Argentina; fledglings in Oct-Dec in S Chile and Argentina. Oct in Brazil, Oct-Nov in Peru, Dec in N Bolivia; 2 broods per year, possibly only in some areas. Presumably monogamous. Nest at end of horizontal tunnel 0.4-3.5 m long excavated in bank or (usually sloping) ground, floor of nest-chamber with padding 8-10 cm across of grasses, hairs, flowers, feathers and rootlets, sometimes only barely padded. Clutch 2-3 eggs; incubation and care of young by both sexes.

**Movements.** Andean races evidently largely resident, with some downslope movement after breeding (*titicacae*, *contrerasi*, *hellmayri*); some post-breeding movement N in C Chile and SW Argentina (*hellmayri*). Individuals in extreme S (nominate) migrate N, but S limit of non-breeding range uncertain.

**Status and Conservation.** Not globally threatened. Common to locally abundant in variety of habitats with light to moderate anthropogenic disturbance, and found over a large geographical and elevational range. Occurs in Aparados da Serra National Park, in Brazil. Possibly at risk in SE Brazil, where extensive development of beach areas on Santa Catarina I could lead to local extinction.

**Bibliography.** Anon. (2003d), Araya & Chester (1993), Belton (1984), Bond (1945), Canevari *et al.* (1991), Chesser (1994), Contreras (1975, 1979c), Contreras & Hoy (1980), Cory & Hellmayr (1925), Cuello (1985), Esteban (1951b), Fjeldsa & Krabbe (1990), Fraga & Narosky (1985), Grigera *et al.* (1996), Hoy (1980), Hudson (1920), Johnson (1967), Koepeke (1954, 1963, 1965, 1970), Krabbe *et al.* (1996), Lönnberg (1903), Morrison (1939), Naka *et al.* (2002), Narosky (1975a), Narosky *et al.* (1983), Navas & Bö (1987), Nores & Yzurieta (1980), Nores *et al.* (1983), Parker *et al.* (1982), de la Peña (1987, 1988), Peters (1925), Philippi *et al.* (1954), Remsen (2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Tudor (1994), Salvador (1988, 1990), Selater & Hudson (1888), Serié & Smyth (1923), Sick (1993), Stotz *et al.* (1996), Vaz-Ferreira (1973), Vuilleumier (1991, 1993a), Walker (2001), Wetmore (1926), Willis (1992b), Zimmer (1935b, 1936a), Zotta (1936).

## 3. Slender-billed Miner

### *Geositta tenuirostris*

**French:** Géositte à bec grêle **German:** Dünnschnabel-Erdhacker **Spanish:** Minero Picudo

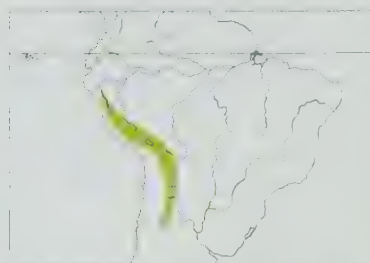
**Taxonomy.** *Alauda tenuirostris* Lafresnaye, 1836, no locality = Sicasica, La Paz, Bolivia. Plumage characteristics suggest most closely related to *G. cunicularia*; separation of the two in conventional linear sequences is a result of overemphasis on bill morphology in traditional taxonomy. Some specimens from NW Peru (Cajamarca) intermediate between nominate race and *kalimayae*. Two subspecies recognized.

#### Subspecies and Distribution.

*G. t. kalimayae* Krabbe, 1992 - Andes of C Ecuador (Cotopaxi).  
*G. t. tenuirostris* (Lafresnaye, 1836) - Andes of Peru (Cajamarca S to Arequipa in W, and S from Huánuco on E slope), Bolivia and NW Argentina (S to Tucumán; one record La Rioja).

**Descriptive notes.** 16-18 cm; 32-38 g. Large miner with long, decurved bill. Has dull buffy whitish supercilium, vague dark brownish postocular band and poorly defined moustachial streak; rest of face messy pale buffy brownish; crown dull brown, with dark brown feather centres forming vague wavy streaks; upperparts dull greyish-brown, some feathers indistinctly edged paler, rump and uppertail-coverts slightly paler than back; wing-coverts dark brown, with broad dark buff tips and edges forming indistinct wingbars; flight-feathers dark fuscous with rufescent





*kalimayae* is smaller, greyer, with darker wings and tail, breast more streaked. **VOICE.** Song given in flight, sometimes continued on ground, a repetitive series of “jit” or “keek” notes, c. 4 per second, can last for 20 seconds or more. Call(s) described as sharp “keeeek”, “week, week”, “chwea” or nasal “kyeenh”.

**Habitat.** Puna grassland and scrub, sloping or flat, also pastures and agricultural land; often near water; 2500–4600 m.

**Food and Feeding.** Recorded dietary items are Coleoptera, Lepidoptera larvae, spiders, and springtails (Collembola). Solitary or in pairs. Gleans and probes on ground; also excavates invertebrates from ground.

**Breeding.** Season generally during austral summer, but little information available; eggs in Dec, in Argentina. Presumably monogamous. Male performs song-flight in display. Nest in tunnel possibly made by *Upucerthia* earthcreepers in bank; tunnel c. 60 cm long leads to nest-chamber c. 14–15 cm in diameter; nest is a pad c. 2 cm deep of dried grasses lined with cattle hair. Clutch 2 eggs. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common, including in lightly farmed areas. No obvious threats.

**Bibliography.** Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Esteban (1951b), Fjeldsá & Krabbe (1990), Fjeldsá & Mäijer (1996), Fraga & Narosky (1985), Johnson (1967), Koepcke (1954, 1970), Krabbe (1992a), Mazar Barnett & Pearman (2001), Morrison (1939), Narosky *et al.* (1983), Norez & Yzurieta (1981), Olrog (1956, 1963a), Parker *et al.* (1982), Pearman (1994f), de la Peña (1988), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Sallaberry *et al.* (1992), Salvador *et al.* (1984), Stotz *et al.* (1996), Taczanowski (1884), Walker (2001), Zimmer (1930).

## 4. Short-billed Miner

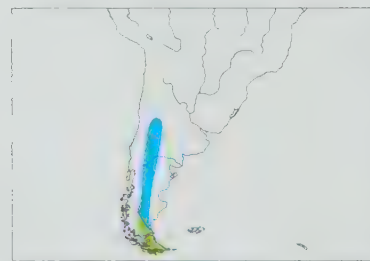
### *Geositta antarctica*

**French:** Géositte à bec court    **German:** Feuerland-Erdhacker    **Spanish:** Minero Austral

**Taxonomy.** *Geositta antarctica* Landbeck, 1880, Tierra del Fuego.

Plumage and morphological features suggest most closely related to *G. cunicularia*. Monotypic.

**Distribution.** S Argentina (S Santa Cruz S to N Tierra del Fuego) and S Chile; W & S Argentina in non-breeding season.



**Descriptive notes.** 15–16 cm; 34–40 g. Moderate-sized miner with relatively short bill, and no prominent wing markings. Has pale supercilium, dark line behind eye; dull greyish-brown above, whitish uppertail-coverts; long, dark brown wings, narrow ill-defined greyish wingband; tail blackish-brown, except outer three rectrices mostly whitish; dull whitish below, breast streaked light buff-brown; iris brown; bill blackish, paler base of lower mandible; tarsus and toes blackish. Sexes alike. Juvenile has pale-tipped crown feathers, less conspicuous breast markings. **VOICE.** A series of doubled notes, “weetuk-weetuk-weetuk-weetuk”; flight call a shrill “tjeeek, de trrit, trrittrrittrrittrrit”.

**Habitat.** Southern temperate grassland; barren plains with sparse grassland, scattered shrubs; also in sandy coastal areas. Sea-level to 1000 m.

**Food and Feeding.** Arthropods and seeds, gleaned from ground. Forages solitarily or in pairs.

**Breeding.** Breeds in austral summer; nests with eggs in Nov and young in Jan in S Chile. Presumably monogamous. Nest at end of tunnel 0.5–1.5 m long excavated in side of dune, floor of nest-chamber padded with a few grasses. Clutch 3 eggs.

**Movements.** Mainly resident, e.g. present on Tierra del Fuego all year round. In Argentina, some post-breeding movement northwards and downslope; recorded N to Mendoza.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Southern Patagonia EBA. Abundant to fairly common. Habitat occupied appears to be reasonably safe from anthropogenic disturbances, with the exception of overgrazing.

**Bibliography.** Anon (2003e), Araya & Chester (1993), Canevari *et al.* (1991), Chebez *et al.* (1999), Chesser (1994), Contreras & Hoy (1980), Cory & Hellmayr (1925), Couve & Vidal-Ojeda (1999), Esteban (1951b), Fjeldsá & Krabbe (1990), Humphrey *et al.* (1970), Johnson (1967), Mazar Barnett & Pearman (2001), Olrog (1963a), de la Peña (1988), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vuilleumier (1980a, 1991).

## 5. Greyish Miner

### *Geositta maritima*

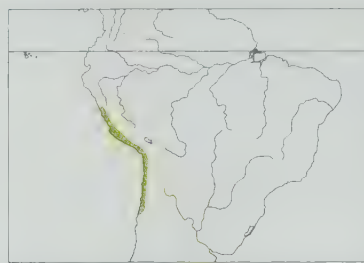
**French:** Géositte grise    **German:** Südlicher Grauerdhacker    **Spanish:** Minero Gris  
**Other common names:** Shore Miner

**Taxonomy.** *Certhilauda maritima* d’Orbigny and Lafresnaye, 1837, Cobjia, “Bolivia” (= northern Chile).

Possibly closest to *G. peruviana*, as suggested by some plumage similarities, small size and biogeography, but absence both of wingband and of rufous in tail unique within genus. Monotypic.

margins, rufous inner remiges; tail slightly notched, central rectrices dull brown, darker towards tip, paler and more rufescent at base, rest of feathers rufous with dark brown subterminal areas decreasing in extent laterally, outer two pairs virtually all rufous, outer web of outer rectrix pale cinnamon; throat whitish, breast buff-white with indistinct brownish wavy streaking, belly pale buffy whitish, undertail-coverts pale tawny; iris brown; bill blackish, pinkish base of lower mandible; tarsus and toes black. Sexes alike. Juvenile is more rufous throughout, has pale edges on back and crown feathers. Race

**Distribution.** W Peru (S from Ancash) and N Chile (S to Atacama).



**Descriptive notes.** 12–13 cm; 16–17 g. Small, dull miner with medium-length bill, without wingband or highly patterned tail. Has dull buff supercilium, vague blackish-brown postocular line, rest of face messy brownish; crown dull brownish-grey, upperparts slightly paler; wings dull greyish-brown, indistinct paler margins on wing-coverts; tail slightly notched, central rectrices dull greyish-brown, rest blackish, outer web of outer rectrix whitish; underparts dull greyish-white, slightly darker on breast, flanks tinged dull salmon-pink; iris dark brown; bill blackish, proximal half of lower mandible pale grey to pinkish-horn; tarsus and

toes black. Sexes alike. Juvenile is more buffy throughout, tips of wing-coverts paler and more buffy. **VOICE.** Song an unmusical “te-cerrrr” sometimes followed by additional series of rising and falling notes; call described as “siet”, “plyt-plyt” or “plyt”.

**Habitat.** Arid lowland scrub; flat to hilly or mountainous, rocky and sandy desert, usually with little or no vegetation; sea-level to 2600 m, sometimes to 3500 m.

**Food and Feeding.** Arthropods and some seeds, gleaned or excavated from ground. Forages singly or in pairs.

**Breeding.** Season presumably during austral summer; eggs in Nov in Chile. Presumably monogamous. Nest at end of tunnel, possibly excavated by the birds themselves, in ground. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common within its restricted habitat. Unsuitability of most of its habitat for use by humans appears to insulate this species from most threats.

**Bibliography.** Araya & Chester (1993), Cory & Hellmayr (1925), Fjeldsá & Krabbe (1990), Johnson (1967), Koepcke (1963, 1970), Mazar Barnett & Pearman (2001), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Stotz *et al.* (1996), Taczanowski (1884).

## 6. Coastal Miner

### *Geositta peruviana*

**French:** Géositte du Pérou    **German:** Nördlicher Grauerdhacker    **Spanish:** Minero Peruano  
**Other common names:** Little Miner

**Taxonomy.** *Geositta peruviana* Lafresnaye, 1847, vicinity of Lima, Peru.

Some plumage similarities, small size and biogeography have suggested to some authors that it is most closely related to *G. maritima*, although fundamental differences in wing and tail patterns may indicate otherwise. Has been considered to form a superspecies with *G. cunicularia*, but this thought unlikely. Three subspecies recognized.

**Subspecies and Distribution.**

*G. p. paytae* Menegaux & Hellmayr, 1906 - NW Peru (Piura, Lambayeque, La Libertad, Ancash).

*G. p. peruviana* Lafresnaye, 1847 - W Peru (Lima).

*G. p. rostrata* Stolzmann, 1926 - SW Peru (Ica).



**Descriptive notes.** 12–13 cm; 16–19 g. Small, pale miner with medium-length bill, conspicuous wing pattern in flight. Has buffy whitish supercilium, rest of face pale sandy greyish-brown; crown and upperparts sandy greyish-brown, rump and uppertail-coverts slightly paler; wings mostly sandy greyish-brown, paler margins on wing-coverts, broad pale tawny wingband on remiges; tail slightly notched, central rectrices pale rufescent with conspicuous, broad dark brownish shaft streaks, rest of feathers mostly blackish, some pale dull rufescent at base increasing in extent towards outer feathers, outer web of outer rectrix whitish; underparts whitish, slightly darker on breast; iris dark brown; bill blue-grey or grey-horn, palest at base of lower mandible; tarsus and toes creamy whitish to greenish-grey. Sexes alike. Juvenile undescribed. Race *paytae* is considerably paler than nominate; *rostrata* resembles previous, but even paler, less brownish, above, with larger, blacker bill. **VOICE.** Song by male in display-flight a prolonged musical twittering; call a short “tuit” or “tswit”.

**Habitat.** Arid lowland scrub; sparsely vegetated, usually sandy, coastal desert; also on *lomas*; from near sea-level to 700 m.

**Food and Feeding.** Arthropods, gleaned from ground. Forages solitarily or in pairs.

**Breeding.** Eggs in Jun. Presumably monogamous. One nest was at end of 2-m tunnel sloping downwards in sandy, level ground, other possible nests in tunnel in dirt bank; not known whether tunnel excavated by birds themselves. Clutch 2 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Tumbesian Region EBA and Peru-Chile Pacific Slope EBA. Fairly common within the habitat which it occupies. Unsuitability of most of its habitat for use by humans insulates this species from most threats.

**Bibliography.** Bond (1945), Cook (1996), Cory & Hellmayr (1925), González *et al.* (1998), Koepcke (1954, 1963, 1965, 1970), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Taczanowski (1884), Vaurie (1972, 1975), Vuilleumier (1980a, 1982), Williams (1981).

## 7. Dark-winged Miner

### *Geositta saxicolina*

**French:** Géositte à ailes sombres    **German:** Zimthals-Erdhacker    **Spanish:** Minero Alioscuro  
**Other common names:** Black-winged Miner

**Taxonomy.** *Geositta saxicolina* Taczanowski, 1875, Junin, Peru.

Plumage similarities suggest that it is most closely related to *G. punensis* and *G. rufipennis*. Monotypic.



**Distribution.** Andes of C Peru (Pasco, Junín, Lima, Huancavelica).



**Descriptive notes.** 15-16 cm; 31-35 g. Large miner with medium-length bill, no conspicuous wing pattern. Has indistinct cinnamon-buff supercilium and side of neck, slightly darker auriculars and loreal area; crown dull brownish with darker brown feather centres, forehead tinged dull rufescent; back and rump dull brownish with cinnamon tinge, uppertail-coverts pale tawny whitish; wing-coverts mostly dull brown with some paler edging, remiges dull brown with darker fuscous primary tips; tail square to slightly notched, pale tawny at base, blackish-brown distally, tips dull rufous, amount of blackish decreases progressively from central to outer feathers, as does paleness of tawny area, outer web of outer rectrix whitish; throat whitish, breast buff, belly buff-white; iris brown; bill black, paler base of lower mandible; tarsus and toes black. Sexes alike. Juvenile is more buffy throughout, has dark scaling on breast. VOICE. Song not described; flight call “titi-titi”, “tir-tir-tir” or “cheerp, cheerp”.

**Habitat.** Puna grassland; on sparsely vegetated grassy or rocky slopes in puna; mostly at 3700-4900 m.

**Food and Feeding.** Arthropods and occasionally seeds, gleaned from ground. Forages solitarily or in pairs.

**Breeding.** Virtually no data available. Breeding presumably during austral summer; fledglings in Dec. Nest is in tunnel at base of large rocks.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Junín Puna EBA. Fairly common within its limited range. Most of the habitat occupied by this species is unsuitable for use by humans, rendering it relatively safe from most threats.

**Bibliography.** Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Koepcke (1954, 1970), Morrison (1939), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Taczanowski (1884).

## 8. Puna Miner

### *Geositta punensis*

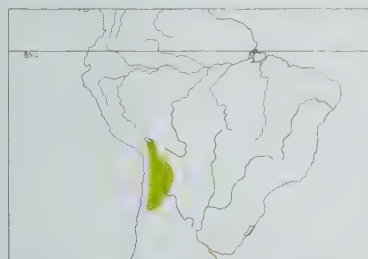
**French:** Géosite du puna

**German:** Altiplano-Erdhacker

**Spanish:** Minero Puneño

**Taxonomy.** *Geositta punensis* Dabbene, 1917, La Quiaca, 3300 metres, Jujuy, Argentina. Plumage similarities suggest that closest relationship is with *G. saxicolina* and *G. rufipennis*. Monotypic.

**Distribution.** Altiplano region of Andes of extreme S Peru (Puno), W Bolivia (La Paz S to Potosí), NW Chile (Tarapacá S to Atacama) and NW Argentina (Jujuy S to Catamarca).



**Descriptive notes.** 13.5-14.5 cm; 22-29 g. Medium-sized miner with medium-length bill, conspicuous wing pattern. Has supercilium buffy whitish, rest of face mostly pale greyish-brown; crown to rump relatively uniform pale sandy brown, uppertail-coverts much paler; wing-coverts and remiges dark brownish, broadly margined buff-whitish, pale tawny-rufous base of remiges forming conspicuous wingband; tail square to slightly notched, rectrices pale tawny-rufous at base, this colour increasing in extent laterally, dark brownish (central pair) to blackish distally, all tipped pale tawny-rufous, outer web of

outer rectrix white; underparts pale buff-white, faintly tinged tawny on flanks; population in NW Argentina may be slightly paler in coloration; iris brown; bill blackish, base of lower mandible blue-grey; tarsus and toes dark grey. Sexes alike. Juvenile undescribed. VOICE. Song a long shrill series of “veeo” notes, rising early and then descending, with some interspersed faster, chattier notes, may last more than 20 seconds; often given in flight display. Flight call a sharp, rich “pzea” or “kvee”.

**Habitat.** Puna grassland; mainly flat Altiplano grassland and barren puna, often sandy; occasionally on bare slopes of brushy ravines. Mainly 3200-4600 m; locally down to 3050 and up to 5000 m.

**Food and Feeding.** Arthropods and seeds, gleaned from ground. Feeds singly or in pairs.

**Breeding.** Breeds during austral summer; eggs and young in Oct-Jan in Chile; fledglings in Jan in Bolivia and Argentina. Presumably monogamous. Nest usually at end of burrow made by tuco-tucos (*Ctenomys*) in dry, sandy soil. Clutch 2-3 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common. Coexists with humans on heavily grazed Altiplano, and presumably has done so for thousands of years. No known threats.

**Bibliography.** Araya & Chester (1993), Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Esteban (1951b), Fjeldså & Krabbe (1990), Johnson (1967), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olrog (1963a), Parker *et al.* (1982), de la Peña (1988), Remsen (2003a), Remsen & Traylor (1989), Ribero (1991), Ridgely & Tudor (1994), Rocha & Quiroga (1996), Stotz *et al.* (1996).

## 9. Rufous-banded Miner

### *Geositta rufipennis*

**French:** Géosite à ailes rouges

**German:** Rotschwanz-Erdhacker

**Spanish:** Minero Rojizo

**Other common names:** Red-winged Miner

**Taxonomy.** *Geobamon rufipennis* Burmeister, 1860, Paraná, Entre Ríos; error = Sierra de Tucumán, Argentina.

Plumage similarities suggest that closest relationship is with *G. saxicolina* and *G. punensis*. Birds from C Chile sometimes separated as race *hellmayri*, but considered probably better placed within race *fasciata* (in any case, former name preoccupied by *G. cunicularia hellmayri*). Sight records

from S Bolivia (Tarija) also included with latter, but racial identity requires confirmation. Seven subspecies tentatively recognized.

**Subspecies and Distribution.**

*G. r. fasciata* (R. A. Philippi [Krumwiede] & Landbeck, 1864) - W Bolivia (La Paz S to Potosí; sight records from Tarija) and Pacific slope of N & C Chile (Atacama S to Malleco).

*G. r. harrisoni* Marin *et al.*, 1989 - N Chile (SW Antofagasta).

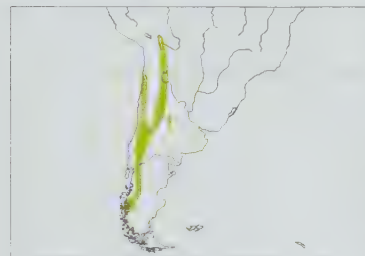
*G. r. rufipennis* (Burmeister, 1860) - NW Argentina (Jujuy S to San Juan).

*G. r. fragai* Nores & Yzurieta, 1986 - NW Argentina (Cerro Famatina, in La Rioja).

*G. r. ottowi* Hoy, 1968 - WC Argentina (Sierra de Córdoba).

*G. r. hoyi* Contreras, 1980 - W Argentina (Mendoza S to N Neuquén) and S Chile (S Aisén).

*G. r. gilaui* Contreras, 1976 - SW Argentina (S Neuquén S to Chubut).



**Descriptive notes.** 14-17 cm; 25-54 g. Middle-sized to large miner with straight, medium-length bill, striking wing pattern. Nominative race has conspicuous pale supercilium, dark grey-brown postocular line, rest of face messy brownish-grey; crown to uppertail-coverts uniform dull sandy olive; wing dull grey-brown with paler edgings, rufescent area at base of remiges forming conspicuous broad rufous wingband; tail square to slightly notched, central rectrices dull tawny at base, blending to greyish-brown centrally, with conspicuous broad blackish subterminal area and dull tawny tip, outer rectrices with brighter,

more rufescent base and progressively more reduced dark subterminal area; throat whitish, breast pale brownish-buff, belly paler, tinged cinnamon, often some cinnamon on flanks; undertail-coverts dull pale tawny; iris brown; bill blackish-grey, most of base of lower mandible paler horn; tarsus and toes blue-grey. Sexes alike. Juvenile undescribed. Races differ substantially in size, also in colour tones: *ottowi* (described from only 2 specimens) is larger and greyer than nominate, with narrower wingbars, paler underside of wings; *fragai* is greyer above, with darker wings and tail, breast greyer, less ochraceous; *hoyi* is almost pure grey dorsally, mostly pinkish-grey below, breast tinged greyer; *gilaui* resembles previous, but slightly darker and greyer above, wingband evidently less extensive, is also significantly longer-billed; *fasciata* is greyer above, and darker overall; *harrisoni* is smaller still (by 10% in linear measurements, 30% in body mass), with whiter belly than previous, little or no rufous on flanks and undertail-coverts. VOICE. Song a fast series (c. 5 per second) of buzzy, trilled notes on same pitch, interrupted by bursts of faster notes, may last more than 20 seconds, decelerating somewhat at end; given in display-flight or from prominent perch on rock.

**Habitat.** Puna grassland and arid montane scrub; dry rocky slopes, plateaux, or flat areas with scattered vegetation, also banks of dry riverbeds. Mainly 3100-4400 m in Andes, down to 2200 m in mountains of C Argentina; to near sea-level locally in Chile (Atacama).

**Food and Feeding.** Arthropods; also seeds, especially of *Coliguaya odorifera* (Euphorbiaceae), and leaf buds. Forages solitarily or in pairs; in loose single-species flocks on migration. Food items gleaned from ground.

**Breeding.** Breeds during austral summer; eggs in Nov-Mar in Argentina; nestlings in Nov in Chile. Presumably monogamous. Nest at end of tunnel 0.4-1.2 m long excavated 0.5-0.7 m from top of wall of bank or ravine, sometimes in crevice in rocks, floor of nest-chamber with bits of grass, hairs and feathers or, at times, deeper platform up to 1 cm thick and 15-17 cm in diameter. Clutch 2-3 eggs.

**Movements.** Mainly resident; some post-breeding movement to lower elevations in Chile and Argentina. S races migratory, move N after breeding, but non-breeding range uncertain; migrants occur in flocks of up to 500.

**Status and Conservation.** Not globally threatened. Fairly common throughout range. Habitat reasonably safe from anthropogenic disturbance, except overgrazing.

**Bibliography.** Chebez *et al.* (1999), Contreras (1976, 1980f), Cory & Hellmayr (1925), Dabbene (1917), Esteban (1949, 1951b), Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), Grigera *et al.* (1996), Hoy (1968a), Johnson (1967), Krabbe *et al.* (1996), Marin *et al.* (1989), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas & Bó (1987), Nellar (1993), Nores (1986), Nores *et al.* (1983), de la Peña (1987, 1988), Remsen (2003a), Remsen & Traylor (1989), Ribero (1991), Ridgely & Tudor (1994), Salvador (1990), Stotz *et al.* (1996), Taczanowski (1884), Volkmann & Cargnelutti (2001), Vuilleumier (1993a), Wetmore (1926).

## 10. Creamy-rumped Miner

### *Geositta isabellina*

**French:** Géosite isabelle

**German:** Hellbürzel-Erdhacker

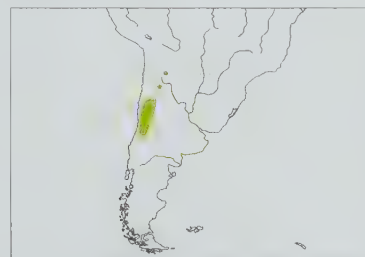
**Spanish:** Minero Grande

**Other common names:** Isabelline Miner

**Taxonomy.** *Certhilauda isabellina* R. A. Philippi [Krumwiede] and Landbeck, 1864, Cordilleras of Santiago Province, Valle Largo and Los Piqueños, at 7000 and 10,000 feet [c. 2100 and 3000 m], Chile.

Plumage similarities suggest that closest relationship is with *G. saxicolina*, *G. punensis* and *G. rufipennis*. Monotypic.

**Distribution.** Andes of C Chile (Atacama S to Talca) and extreme WC Argentina (Jujuy, Catamarca, San Juan, Mendoza).



**Descriptive notes.** 17.5-18.5 cm; 38-48 g. Large miner with relatively long decurved bill, no conspicuous wing patch. Has pale supercilium; uniform pale sandy buff above, contrasting creamy-white rump and uppertail-coverts; tail buff, central rectrices and broad subterminal band blackish; throat whitish, breast and belly light ochraceous cream to greyish-cream; iris brown; bill blackish, base of lower mandible yellowish-horn; tarsus and toes blue-grey. Sexes alike. Juvenile has pale spots on crown. VOICE. Song loud, strident trill of 3-12 notes, given in display-flight or from prominent perch on rock.

**Habitat.** Puna grassland; in puna on barren slopes of high Andes, especially near rocky outcrops, at 3000-5000 m; often lower in non-breeding season.

**Food and Feeding.** Arthropods, gleaned from ground and rocks. Feeds singly or in pairs.



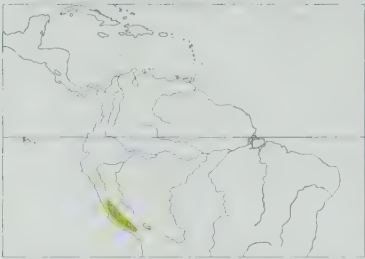
**Breeding.** Season presumably during austral summer; young in Feb in Chile. Presumably monogamous. Nest at end of tunnel excavated in sloping ground. Clutch 3 eggs.  
**Movements.** Mainly resident; some downslope movement, to 2000 m, after breeding.  
**Status and Conservation.** Not globally threatened. Uncommon, and with small geographical range. Habitat is reasonably safe from anthropogenic disturbances, except overgrazing.  
**Bibliography.** Araya & Chester (1993), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Cory & Hellmayr (1925), Esteban (1951b), Fjeldså & Krabbe (1990), Johnson (1967), Mazar Barnett & Pearman (2001), Navas & Bo (1987), Olrog (1963a), Peña (1961), de la Peña (1988), Ridgely & Tudor (1994), Stotz *et al.* (1996).

11. Thick-billed Miner

*Geositta crassirostris*

**French:** Géositte à bec épais    **German:** Dick Schnabel-Erdhacker    **Spanish:** Minero Picogrueso

**Taxonomy.** *Geositta crassirostris* P. L. Selater, 1866, Lima, Peru.  
Relationships to other members of genus uncertain, but present species differs vocally. Two subspecies recognized.  
**Subspecies and Distribution.**  
*G. c. crassirostris* P. L. Selater, 1866 - coastal hills of W Peru (Lima).  
*G. c. fortis* Berlepsch & Stolzmann, 1901 - Andes of SW Peru (Lima S to Arequipa).  
**Descriptive notes.** 16-18 cm; 49-54 g. Large miner with large, thick, long bill, conspicuous rufous and black patch in wing. Has whitish supercilium, dark grey-brown crown with darker brown feather centres; upperparts dark dull brownish-grey, feathers variably margined paler, rump slightly paler, uppertail-coverts tinged browner; wing-coverts dull brownish-grey with paler margins, remiges dark fuscous-brown with paler edgings and rufous bases, latter forming broad wingband, black terminally; tail square to slightly notched, central rectrices dull greyish-brown, faintly tinged



rufescent, darker along shaft, paler at tip, other rectrices dull rufous at base with blackish subterminal area diminishing in extent towards outer feathers, dull rufous-buff tips; underparts greyish-white, slightly darker on breast; iris brown; bill blackish, base of lower mandible blue-grey; tarsus and toes whitish to pale grey. Sexes alike. Juvenile undescribed. Race *fortis* differs from nominate in being paler, more rufescent above, mottling not so dark, rufous wingband broader, terminal black wingband narrower. **VOICE.** Song a series of c. 10 wheezy notes, rising and then falling in pitch, lasting c. 5 seconds. Flight call “chirp”; other calls

are loud, plaintive notes, also loud “quien, quien” or “keen, keen”.  
**Habitat.** Arid montane scrub; brushy ravines adjacent to arid, rocky slopes with scattered shrubs and cacti, at 600-3550 m.  
**Food and Feeding.** Arthropods and some seeds, gleaned and excavated from ground. Solitary or in pairs.  
**Breeding.** No information.  
**Movements.** Resident.  
**Status and Conservation.** Not globally threatened. Restricted-range species: present in Peru-Chile Pacific Slope EBA. Uncommon. Habitat occupied appears reasonably safe from anthropogenic disturbances, except overgrazing.  
**Bibliography.** Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Koepcke (1954, 1963, 1970), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Schulenberg (1987a), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Zimmer (1930).







*ssp dumetaria*

*ssp saturator*

13

12

15

14

*ssp ruficaudus*

16

17

18

*ssp montana*

19

21

*ssp certhioides*

20

*ssp estebani*

22

*ssp melanura*

*ssp atacamae*

PLATE 12

inches 3  
cm 8



## Genus *UPUCERTHIA*

### I. Geoffroy Saint-Hilaire, 1832

## 12. Scale-throated Earthcreeper

### *Upucerthia dumetaria*

**French:** Upucerthie des buissons

**German:** Schuppenkehl-Erdhacker

**Spanish:** Bandurrita Común

**Other common names:** Scaly-throated Earthcreeper

**Taxonomy.** *Upucerthia Dumetaria* I. Geoffroy Saint-Hilaire, 1832, Patagonia = banks of the Río Negro, Argentina.

Some similarities in plumage suggest that it is most closely related to the group formed by *U. albigula*, *U. jelskii* and *U. validirostris*. Proposed race *hallinani* (N Chile, NW Argentina) appears to represent clinal extreme of paleness at N end of range of *hypoleuca*. Patterns of geographical variation conform in general with Gloger's Rule, with populations from arid areas usually the palest in coloration. Four subspecies recognized.

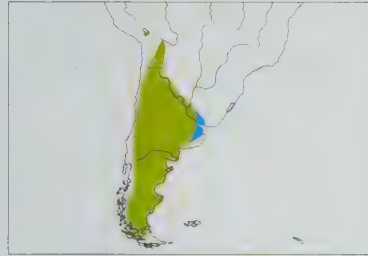
#### Subspecies and Distribution.

*U. d. peruana* J. T. Zimmer, 1954 - Andes of S Peru (Puno).

*U. d. hypoleuca* Reichenbach, 1853 - W Bolivia, C Chile (Antofagasta S to Maule) and W Argentina (Jujuy S to N Río Negro, E to Córdoba).

*U. d. saturator* Scott, 1900 - C Chile (S possibly from Malleco, to Valdivia) and SW Argentina (W Neuquén S to W Chubut).

*U. d. dumetaria* I. Geoffroy Saint-Hilaire, 1832 - S Chile (Aisén, Magallanes) and C & S Argentina (Córdoba and Buenos Aires S to N Tierra del Fuego).



**Descriptive notes.** 20-22 cm; 37-55 g. Large earthcreeper with long, strongly decurved bill. Nominant race has whitish supercilium, rest of face grizzled greyish-white and dark dull greyish-brown; crown dull, dark greyish-brown with faint mottling, especially on forehead; back to uppertail-coverts uniform dull brownish-grey; wings greyish-brown with paler edgings, base of remiges dull rufous; tail rounded, central rectrices dull greyish-brown, slightly browner than back, other rectrices blackish-brown with dull rufous tips, rufous increasing in extent outwards; chin whitish, throat whitish with thin dark bars, breast dark

greyish-brown with pale scalloping, belly whitish, blending to greyish-brown on flanks, dull grey-brown undertail-coverts; iris dark brown; bill blackish; tarsus and toes dark brown. Sexes alike. Juvenile is finely streaked on forehead and back, more extensively marked below. Race *hypoleuca* is like nominate, but more rufous above, with rufescent tinge in wings, more buffy below; *saturator* is much darker above and below than other races, upperparts with olivaceous tinge, central rectrices dusky brown without rufous tinge, lacks pale tips to wing-coverts, greyer and less buffy below, breast markings more prominent, bill reportedly slightly shorter and less strongly decurved; *peruana* (known from 2 specimens) resembles previous but slightly less dark, bill longer, rufous in wing less sharply outlined. **Voice.** Song "chippy, chippy, chippy, chip"; calls a wheezy "keet" and sharp, dry "dzit".

**Habitat.** Arid montane scrub, arid lowland scrub, and *puna* grassland, to 4000 m. Inhabits shrubby slopes and shrub-steppe (e.g. *Atriplex*), with ravines or rocky outcrops, and rocky grassland.

**Food and Feeding.** Arthropods. Usually solitary. Forages by probing and gleaning ground.

**Breeding.** Breeds during austral summer; eggs and nestlings in Oct-Dec in Chile and Argentina. Presumably monogamous. Nest at end of tunnel 1-2 m long excavated in bank or sloping ground, entrance sometimes hidden by vegetation and branches, occasionally in hole in structure or in crevice among rocks; floor of nest-chamber with a pad of loose grasses. Clutch 2-4 eggs.

**Movements.** Mainly resident, with some post-breeding downslope movement. Nominant race probably leaves Tierra del Fuego and other parts of extreme S after breeding, migrates northwards to as far as N Argentina (to Tucumán, Santiago del Estero and Entre Ríos) and S Uruguay; in Chile, *saturator* occurs N to Aconcagua in non-breeding season.

**Status and Conservation.** Not globally threatened. Fairly common in S portion of range. Evidently very rare in N; in Bolivia has been found at just a few localities, and no recent records; in S Peru, race *peruana* known only from two specimens collected more than 50 years ago. Habitat is reasonably safe from anthropogenic disturbances, overgrazing being the only potential threat.

**Bibliography.** Anon. (2003d), Araya & Chester (1993), Blendinger (2003), Bond (1945), Canevari *et al.* (1991), Contreras (1975, 1978), Cory & Hellmayr (1925), Esteban (1951b), Fjeldså & Krabbe (1990), Grigera *et al.* (1996), Johnson (1967), Lönnberg (1903), Marin *et al.* (1989), Narosky & Di Giacomo (1993), Narosky *et al.* (1983), Navas (1971), Nores *et al.* (1983), Olog (1963a), Parker *et al.* (1982), de la Peña (1987, 1988), Peters (1923), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Tudor (1994), Salvador (1988), Selater & Hudson (1888), Stotz *et al.* (1996), Vuilleumier (1993a), Wetmore (1926), Zimmer (1954), Zotta (1938).

## 13. White-throated Earthcreeper

### *Upucerthia albigula*

**French:** Upucerthie à gorge blanche

**Spanish:** Bandurrita de Arica

**German:** Weißkehl-Erdhacker

**Taxonomy.** *Upucerthia albigula* Hellmayr, 1932, Putre, 11,600 feet [c. 3530 m], Tarapacá, Chile. Plumage similarities suggest that it is most closely related to *U. jelskii* and *U. validirostris*. Monotypic.

**Distribution.** W slope of Andes in SW Peru (S from Ayacucho) and N Chile (Tarapacá).



**Descriptive notes.** 18-19 cm; 36-42 g. Large earthcreeper with long, relatively thick-based, strongly decurved bill. Has broad buffy whitish supercilium extending forward to lores, rest of face dark brownish with paler flammulations; rich dark brown above, darkest on crown; wings dark rufescent brown, all but outermost two primaries with bright rufous outer webs, more rufous at base of remiges (broad wingband); tail rounded, dark rufescent brown, slightly paler towards outer feather pairs and at tips; throat whitish with some faint darker feather tips laterally, breast dull buffy brown with vague streaking (paler areas along

shafts), more speckled at sides, blending into paler belly; flanks darker, faintly tinged rufescent, undertail-coverts dull pale rufous with paler tips; iris brown; bill blackish, sometimes paler base of lower mandible; tarsus and toes black to dark brown or grey. Sexes alike. Juvenile has darker crown, more conspicuous markings on throat and breast. **Voice.** Song a series of 4-10 slightly descending dry, harsh, scolding "chit" notes; call a high-pitched "chit".

**Habitat.** Arid montane scrub; sparsely vegetated slopes, brushy ravines, desert scrub, and adjacent hedgerows of pastures and agricultural land; mostly 3050-3700 m, locally down to 2300 m and up to 3900 m.

**Food and Feeding.** Arthropods. Usually solitary. Probes and gleans ground.

**Breeding.** Season probably during austral summer; eggs in Nov in Chile. Presumably monogamous. Nest at end of tunnel excavated in bank. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Peru-Chile Pacific Slope EBA. Uncommon to locally fairly common. Has small geographical range. Habitat is reasonably secure at present, with overgrazing the only potential threat.

**Bibliography.** Araya & Chester (1993), Fjeldså & Krabbe (1990), Hellmayr (1932), Johnson (1967), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Schulenberg (1987b), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

## 14. Plain-breasted Earthcreeper

### *Upucerthia jelskii*

**French:** Upucerthie de Jelski

**German:** Fahlkehl-Erdhacker

**Spanish:** Bandurrita de Jelski

**Taxonomy.** *Coprotretis Jelskii* Cabanis, 1874, Junin, Peru.

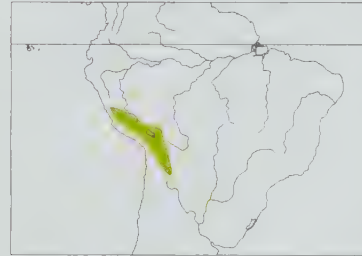
Closest to *U. albigula* and *U. validirostris*. Has been considered to form a superspecies with latter, and may be conspecific; considered together, the two exhibit a stepped cline in plumage coloration (increasingly rufescent to S) and perhaps a smooth cline in measurements, and songs sound very similar (although written descriptions differ somewhat); on the other hand, they appear to overlap in range in S Bolivia (Potosi); further study needed. Vocally distinctive race *pallida* possibly a separate species. Three subspecies recognized.

#### Subspecies and Distribution.

*U. j. saturata* Carriker, 1933 - W Andes of C Peru (Ancash, Huánuco, NW Pasco).

*U. j. jelskii* (Cabanis, 1874) - Andes of C Peru (Lima, Junin, Huancavelica).

*U. j. pallida* Taczanowski, 1883 - Andes of S Peru (Ayacucho, Arequipa, Cuzco, Apurímac, Puno), N Chile (Tarapacá), W Bolivia (La Paz S to Potosi) and NW Argentina (Jujuy).



**Descriptive notes.** 17-19 cm; 33-42 g. Medium-sized to rather large, rather plain earthcreeper with strongly curved, relatively thin bill. Has pale buffish-white supercilium, nearly uniform dull brown crown and upperparts, some paler flecking on forehead; wings like back, nearly uniform, hint of rufous at base of remiges (inconspicuous rufous-brown wingband); tail rounded to nearly square, dark brown, becoming progressively more rufescent towards outer feathers; throat greyish-white with faint dull brownish feather tips, upper breast similar but feather margins more conspicuous, producing scaled appearance, lower

breast to undertail-coverts plain light greyish-buff, lower flanks darker; iris brown; bill black, base of lower mandible sometimes paler; tarsus and toes blackish to dark brown. Sexes alike. Juvenile has more rufous in wings and tail, approaching *U. validirostris* in this respect but with dusky edges of secondaries. **Voice.** Song a rich irregular trill "drrrrr..." rising and then falling in pitch, accelerating and then decelerating, repeated at short intervals; song of *pallida* lower-pitched and slower "tuirrrrr", with a few introductory notes, and less change in pitch. Call a metallic "click" or "tyi-ik".

**Habitat.** Arid montane scrub; rocky, shrubby slopes, especially in washes and ravines, and rocky *puna* grassland; mostly 3200-4600 m, locally down to 3000 m and up to 5000 m.

**Food and Feeding.** Arthropods; recorded items are lepidopteran larvae, and larvae and adults of Coleoptera. Forages solitarily or in pairs. Probes in and gleans from ground.

**Breeding.** Breeds during austral summer, in Jan-Feb in C Peru; nestlings in Feb in S Peru, and eggs in Nov in Chile. Presumably monogamous. Nest at end of tunnel 1-1.5 m long excavated in a bank. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Considered fairly common throughout range. Habitat appears to be reasonably secure, with overgrazing by livestock as the only obvious potential threat.

**Bibliography.** Carriker (1933), Chebez *et al.* (1999), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), Koepcke (1954, 1970), Krabbe *et al.* (1996), Mazar Barnett & Pearman (2001), Mazar Barnett,

On following pages: 15. Buff-breasted Earthcreeper (*Upucerthia validirostris*); 16. Striated Earthcreeper (*Upucerthia serrana*); 17. Rock Earthcreeper (*Upucerthia andaecola*); 18. Straight-billed Earthcreeper (*Upucerthia ruficaudus*); 19. Bolivian Earthcreeper (*Upucerthia harterti*); 20. Chaco Earthcreeper (*Upucerthia certhioides*); 21. Band-tailed Earthcreeper (*Eremobius phoenicurus*); 22. Crag Chilia (*Chilia melanura*).



Clark *et al.* (1998), Parker *et al.* (1982), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Schulenberg (1987b), Stotz *et al.* (1996), Taczanowski (1884), Walker (2001), Zotta (1938).

## 15. Buff-breasted Earthcreeper

### *Upucerthia validirostris*

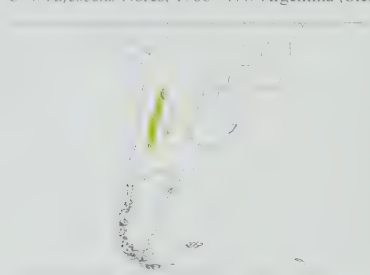
**French:** Upucerthie fauve **German:** Langschnabel-Erdhacker **Spanish:** Bandurrita Ocrácea  
**Other common names:** Buff-bellied Earthcreeper

**Taxonomy.** *Ochetorhynchus validirostris* Burmeister, 1861, Sierra de Mendoza, Argentina. Closest to *U. jelskii* and *U. albigula*. Has been considered to form a superspecies with former, and may be conspecific; considered together, the two exhibit a stepped cline in plumage coloration (increasingly rufescent to S) and perhaps a smooth cline in measurements, and songs sound very similar (although written descriptions differ somewhat); further study needed. Specimen from S Bolivia (Potosí), allegedly of this species, is evidently indistinguishable from race *pallida* of *U. jelskii*. Two subspecies recognized.

#### Subspecies and Distribution.

*U. v. validirostris* (Burmeister, 1861) - NW Argentina (Salta S to Mendoza and W Córdoba).

*U. v. rufescens* Nares, 1886 - NW Argentina (Sierra de Famatina, in La Rioja).



**Descriptive notes.** 19-21 cm; 30-45 g. Medium-sized, rather plain earthcreeper with long, strongly decurved bill. Has pale buffish-white supercilium, nearly uniform dull brownish-grey crown and upperparts, some paler flecking on forehead; wings like back, large area of rufous at base of remiges; tail nearly square, dark brown, becoming progressively more rufous towards outer feathers; throat greyish-white with faint dull brownish feather tips, upper breast like throat but feather margins more conspicuous, producing slightly scaled appearance, lower breast to undertail-coverts plain light buffish, rear flanks darker;

iris dark brown; bill black, paler base; tarsus and toes blackish to dark brown. Differs from extremely similar *U. jelskii* in having larger, longer bill, more rufous in wings. Sexes alike. Juvenile is faintly barred on crown and back, has more conspicuously marked breast. Race *rufescens* is more rufescent throughout. **Voice.** Song a long dry trill of 10 or more "tyik" notes at c. 5 per second; call a low "ehwit".

**Habitat.** *Puna* grassland mostly at 2700-4000 m, locally down to 2500 m and up to 5000 m; inhabits dry washes and ravines in dense scrub, and shrubby slopes.

**Food and Feeding.** Arthropods; Coleoptera, Diptera and springtails (Collembola) recorded. Usually solitary. Probes in and gleans from ground.

**Breeding.** Breeds during austral summer; eggs from Nov and nestlings in Feb-Mar in Argentina. Presumably monogamous. Nest at end of tunnel c. 0.7-1 m long excavated in bank, or in crevice in rocks, nest-chamber c. 12-13 cm in diameter, floor padded with grasses and a few feathers. Clutch 2 eggs.

#### Movements. Resident.

**Status and Conservation.** Not globally threatened. Rare to locally fairly common. Habitat occupied is reasonably safe from anthropogenic disturbances, except overgrazing.

**Bibliography.** Araya & Chester (1993), Cabot (1990), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Cory & Hellmayr (1925), Esteban (1951b), Fiora (1933), Fjeldså & Krabbe (1990), Johnson (1967), Koepeke (1970), Mazar Barnett & Pearman (2001), Morrison (1939), Narosky *et al.* (1983), Navas & Bö (1987), Nares (1886), Nares *et al.* (1983), Olrog (1956), de la Peña (1987, 1988), Ridgely & Tudor (1994), Salvador (1992), Stotz *et al.* (1996), Wetmore (1926), Zimmer (1930), Zotta (1938).

## 16. Striated Earthcreeper

### *Upucerthia serrana*

**French:** Upucerthie striée **German:** Streifenerdhacker **Spanish:** Bandurrita Estriada

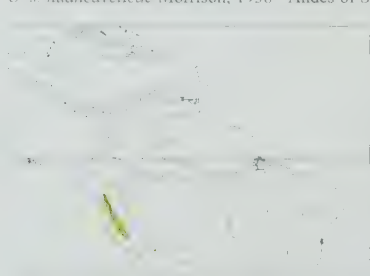
**Taxonomy.** *Upucerthia serrana* Taczanowski, 1875, Junin and Acancocha, Peru.

Considered by some to form a superspecies with *U. andaecola*. Two subspecies recognized.

#### Subspecies and Distribution.

*U. s. serrana* Taczanowski, 1875 - Andes of N & C Peru (Cajamarca S to Lima and Junin).

*U. s. huancavelicae* Morrison, 1938 - Andes of S Peru (Huancavelica).



**Descriptive notes.** 19-20 cm; 44-52 g. Large, dark earthcreeper, darkest in genus, with strongly decurved bill. Has whitish supercilium, black eyestripe, face grizzled dark brownish and dull buffy whitish; crown and back dull dark brown with faint pale streaks, especially on forehead and hindneck, blending to unstreaked chestnut-brown rump and uppertail-coverts; wings mostly reddish-brown, bases of remiges dark rufous; tail rounded, dark reddish-brown to rufous; chin and throat dull greyish-white with hint of scalloping, breast and belly greyish-brown with conspicuous pale shaft streaks, streaks most prominent on centre of breast, lower flanks and

undertail-coverts slightly more rufescent; iris brown; bill blackish, base of lower mandible whitish; tarsus pale grey, toes darker. Sexes alike. Juvenile has scaled breast and faint barring on upper belly, rest of belly almost unstreaked. Race *huancavelicae* described as darker overall, flanks not so brown. **Voice.** Song a harsh trill introduced by 3 separate notes.

**Habitat.** Arid montane scrub and *Polylepis* woodland on rocky, shrubby slopes; present at elevations of 2750-4300 m.

**Food and Feeding.** Arthropods. Usually forages solitary. Probes in and gleans from ground, and flakes leaf litter; occasionally probes bark low in *Polylepis* trees.

**Breeding.** Nestlings in Oct. Presumably monogamous. One nest found, at end of tunnel c. 35 cm long, presumably excavated by the birds themselves, in sloping bank. Clutch size uncertain, probably 2 eggs.

#### Movements. Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Peruvian High Andes EBA. Uncommon. Has fairly small geographical range, but habitat occupied is reasonably secure; overgrazing is the only human disturbance.

**Bibliography.** Cory & Hellmayr (1925), Fjeldså (1992b), Fjeldså & Krabbe (1990), Koepeke (1954, 1970), Morrison (1939), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Taczanowski (1884), Vuilleumier (1980a), Zimmer (1930).

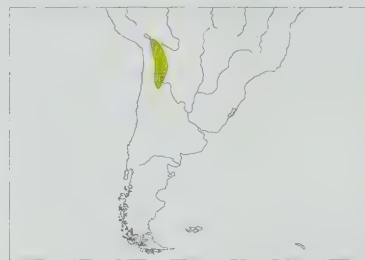
## 17. Rock Earthcreeper

### *Upucerthia andaecola*

**French:** Upucerthie des rochers **German:** Rostschwanz-Erdhacker **Spanish:** Bandurrita Roquera  
**Other common names:** Rufous-tailed Earthcreeper

**Taxonomy.** *Uppucerthia* [sic] *andaecola* d'Orbigny and Lafresnaye, 1838, Sicasica, La Paz, Bolivia. Considered by some to form a superspecies with *U. serrana*, but plumage features suggest possible closer relationship to *U. ruficaudus*. Monotypic.

**Distribution.** Andes of Bolivia (La Paz S to Potosí), extreme NE Chile (W Antofagasta) and NW Argentina (Jujuy, Salta, N Catamarca).



**Descriptive notes.** 16-18 cm; 28-34 g. Medium-sized earthcreeper with long, slightly decurved bill. Has buff supercilium, dark brownish postocular band, buff lower face; crown and upperparts rich brown, blackish streaking on side of rufous-tinged forehead, uppertail-coverts dark rufous-brown; wings slightly more rufescent than back; tail slightly rounded, dark rufous; throat buffy whitish, breast and belly darker, tinged tawny, prominent dark brownish streaks from sides to flanks that extend on to breast and belly but fade towards centre; undertail-coverts tawny; iris brown; bill blackish, base of lower mandible

pale grey; tarsus and toes dark brown or grey-brown. Sexes alike. Juvenile has scaly breast and belly, pale feather edges on back. **Voice.** Song a piercing "veetveet-veeveeveeveevee-veet-viree-veetveevee"; a variable-length series of whining, querulous, strained whistles possibly the same vocalization. Alarm call a high-pitched, rodent-like, squeaky, whistled "zuwéeét".

**Habitat.** Arid montane scrub; locally in *puna* grassland with rocky arid slopes and ravines with scattered bushes and bunch-grass. At 2600-4000 m, locally to 4500 m.

**Food and Feeding.** Arthropods, which are gleaned and extracted from ground. Usually forages solitary.

**Breeding.** Season evidently during austral summer; eggs, nestlings and fledglings in Nov in Argentina. Presumably monogamous. Nest at end of tunnel c. 0.4-1 m long excavated in bank, or in crevice among rocks, nest-chamber floor 6 cm in diameter, padded with plant fibres, dry grasses and a few feathers. Clutch 2 eggs.

#### Movements. Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common. Habitat occupied is reasonably secure, with overgrazing the only human disturbance.

**Bibliography.** Araya & Chester (1993), Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Esteban (1951b), Fjeldså & Krabbe (1990), Fjeldså & Majer (1996), Fraga & Narosky (1985), Høy (1980), Johnson (1967), Krabbe *et al.* (1996), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olrog (1963a), de la Peña (1987, 1988), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Stotz *et al.* (1996).

## 18. Straight-billed Earthcreeper

### *Upucerthia ruficaudus*

**French:** Upucerthie à bec droit **Spanish:** Bandurrita Piquirrecta  
**German:** Geradschnabel-Erdhacker  
**Other common names:** Meyen's Earthcreeper

**Taxonomy.** *Ochetorhynchus ruficaudus* Meyen, 1834, base of Volcán de Maipú, 10,000 feet [c. 3050 m], Santiago, Chile.

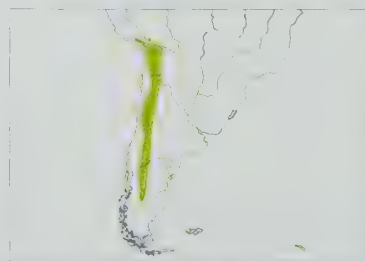
Sometimes included with *U. harterti* and *U. certhioides* in a separate genus *Ochetorhynchus*, but plumage similarities suggest a closer relationship to *U. andaecola*. Differences in coloration of nominate race between N and S extremes (with darker and less reddish upperparts in S) indicate either strong clinal variation or, perhaps, an undescribed race. Three subspecies currently recognized.

#### Subspecies and Distribution.

*U. r. montana* d'Orbigny & Lafresnaye, 1838 - Andes of S Peru (Arequipa to Tacna), Bolivia (La Paz S to Potosí), N Chile (Tarapacá, and probably E Antofagasta) and N Argentina (Jujuy S to Catamarca).

*U. r. famatinae* Nares, 1886 - NW Argentina (Sierra de Famatina, in La Rioja).

*U. r. ruficaudus* (Meyen, 1834) - Andes of W Argentina (San Juan S to S Chubut) and adjacent Chile (S to Santiago).



**Descriptive notes.** 16-19 cm; 28-41 g. Medium-sized earthcreeper with long, very slightly decurved bill. Nominative race has narrow whitish supercilium, black eyestripe, rest of face dull brownish with some paler flammulations; crown brown, slightly mottled, blending to rufescent brown back and rump, with uppertail-coverts dark rufescent (upperparts darker, less reddish, in S of range); wings slightly more rufescent than back, more rufous at base of remiges; tail almost square, central rectrices rufous at base, blending to blackish tips, outer rectrices mostly blackish-brown on inner webs, dark

rufous on outer webs, outer rectrices nearly all rufous; throat and malar area whitish, breast whitish with indistinct diffuse dull brownish streaking, most prominent at sides; belly and flanks pale rufescent brownish, whitish streaking vanishing posteriorly, undertail-coverts tawny; iris brown; bill black or blackish-brown, base of mandible often whitish horn-coloured; tarsus and



toes black or blackish-brown. Sexes alike. Juvenile is tinged rufous throughout, with pale edgings on crown and back feathers. Race *montana* has whiter throat and breast, conspicuously streaked sides and flanks, darker belly; *famatiniae* differs from nominate in slightly darker back, darker flanks and undertail-coverts, more contrasting whiter breast. **VOICE.** Song a fast series of strained, complaining, chattering "pu" notes, rising into 2-3 loud "pee" notes, lasts 10 seconds or more; call a sharp "kweep" or "wheet".

**Habitat.** Arid montane scrub at 1800-4300 m, locally down to 1300 m; inhabits rocky arid slopes and ravines, especially near large boulders, with scattered bushes and bunch-grass.

**Food and Feeding.** Arthropods, gleaned and extracted from ground. Usually forages solitarily.

**Breeding.** Season evidently during austral summer; eggs in Nov-Dec, fledglings in Nov-Jan and nestlings in Feb in Argentina; eggs in Nov-Dec in Chile. Presumably monogamous. Nest at end of tunnel c. 0.5-0.7 m long in rocky crevice or bank, floor of nest-chamber padded with grass, hair and feathers. Clutch 2 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout range. Habitat reasonably safe from anthropogenic disturbances, except overgrazing.

**Bibliography.** Araya & Chester (1993), Bond (1945), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Cory & Hellmayr (1925), David & Gosselin (2002a), Esteban (1951b), Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), Johnson (1967), Mazar Barnett & Kirwan (1999a), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas (1971), Nores (1986), Parker *et al.* (1982), de la Peña (1987, 1988), Remsen (2003a), Remsen & Traylor (1989), Ribero (1991), Ridgely & Tudor (1994), Rocha & Quiroga (1996), Salvador (1990), Schulenberg (1987b), Stotz *et al.* (1996), Vuilleumier (1993a), Wetmore & Peters (1949).

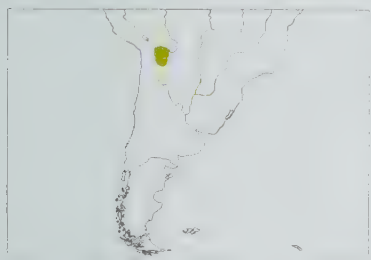
## 19. Bolivian Earthcreeper

### *Upucerthia harterti*

**French:** Upucerthie de Bolivie **German:** Blaßbauch-Erdhacker **Spanish:** Bandurrita Boliviana  
**Other common names:** Hartert's Earthcreeper

**Taxonomy.** *Upucerthia harterti* Berlepsch, 1892, Trigal and Valle Grande, Santa Cruz, Bolivia. Sometimes placed in a separate genus *Ochetorhynchus* along with *U. ruficaudus* and *U. certhioides*; closest to latter, with which has been considered to form a superspecies or to be conspecific. Monotypic.

**Distribution.** Andes of Bolivia (S La Paz S to Chuquisaca and Potosi).



**Descriptive notes.** 16 cm; 22-26 g. Small earthcreeper with long, very slightly decurved bill. Has broad buff supercilium extending to forehead, with mostly dark brownish, grizzled loreal area and auriculars; crown dark brown, blending to rich brown on back and rump and to reddish brown on uppertail-coverts; wings like back, bases of remiges dark rufous; tail rounded, rufous-chestnut basally, blending to fuscous brown distally, outer feather pairs brightest, outer rectrix entirely rufous-chestnut; throat and malar area white, rest of underparts pale cinnamon-buff, lower flanks rufescent brown, undertail-coverts dull rufous;

iris brown; upper mandible blackish, lower mandible pale with blackish tip; tarsus and toes brownish-olive or grey. Sexes alike. Juvenile undescribed. **VOICE.** Song a series of 7-15 loud, dry, clear, penetrating "zeet" notes that increase in intensity, descend in pitch, ending in chatter, lasts c. 5 seconds. Call a sharp "bzeeeeeee" or "dzyoot", repeated frequently; also rodent-like, wheezy, piercing whistle, "dzeeaa".

**Habitat.** Arid montane scrub at 1430-3000 m; inhabits slopes with dense scrub and low deciduous woodland, especially where terrestrial bromeliads common.

**Food and Feeding.** Arthropods; recorded dietary items are tiny molluscs. Usually solitary. Food gleaned from and extracted from ground and rock crevices.

**Breeding.** No information. Presumed to breed during austral summer.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in High Andes of Bolivia and Argentina EBA. Uncommon. Habitat subject to overgrazing and clearance for firewood possibly throughout its small geographical range. Nevertheless, this species appears to tolerate moderate to severe disturbance by humans.

**Bibliography.** Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), Herzog *et al.* (1997), Krabbe *et al.* (1996), Kratter *et al.* (1993), Mazar Barnett *et al.* (1997), Remsen & Traylor (1989), Remsen (2003a), Remsen *et al.* (1988), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wetmore & Peters (1949).

## 20. Chaco Earthcreeper

### *Upucerthia certhioides*

**French:** Upucerthie du chaco **German:** Roststirn-Erdhacker **Spanish:** Bandurrita Chaqueña

**Taxonomy.** *Anabates certhioides* d'Orbigny and Lafresnaye, 1838, Corrientes, Argentina. Sometimes placed in a separate genus *Ochetorhynchus* along with *U. ruficaudus* and *U. harterti*; closest to latter, with which may form a superspecies, or the two may be conspecific. Differs from other congeners for which relevant data available in having pale blue eggs (not white) and more flexible nest-site placement. Racial variation may be partly or entirely clinal, and one or more of the races possibly not tenable; quantitative study of plumage coloration required. Three subspecies recognized.

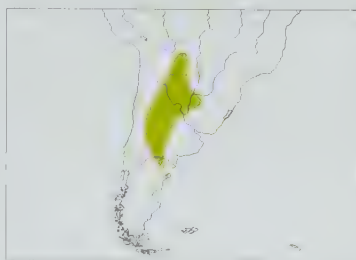
**Subspecies and Distribution.**

*U. c. estebani* (Wetmore & J. L. Peters, 1949) - extreme SC Bolivia (Santa Cruz), N Argentina (Jujuy and Catamarca E to Chaco and S to Córdoba) and W Paraguay.

*U. c. luscini* (Burnmeister, 1860) - W Argentina (San Juan, La Rioja and W Córdoba S to Mendoza and N San Luis).

*U. c. certhioides* (d'Orbigny & Lafresnaye, 1838) - NE Argentina (E Formosa and C Corrientes S to E Río Negro and SW Buenos Aires).

**Descriptive notes.** 16 cm; 18-31 g. Small earthcreeper with long, very slightly decurved bill. Nominative race has indistinct orange-rufous supercilium, messy dark brown loreal region and auriculars; forehead dull orange-rufous, blending to dull dark brownish crown and back; rump and uppertail-coverts slightly more rufescent; wings slightly more rufescent than back, base of remiges rufous;



tail rounded, rufescent brown, duldest on central feather pair, progressively more rufous towards outer feathers; throat and malar area white, underparts dull brown, rufescent flanks and undertail-coverts; iris brown; upper mandible blackish to dark grey, lower mandible slate-grey to pinkish-grey; tarsus and toes blackish to dark grey. Sexes alike. Juvenile is tinged rufous throughout, rufous of forehead less conspicuous. Race *estebani* is paler on back, duller on breast and belly, lacks rufescent tinge on flanks; *luscini* has greyer, less rufescent upperparts, more extensive rufous on wings, paler underparts. **VOICE.** Song a series

of 5-15 loud, squeaky penetrating "chiqui" notes that increase in intensity, descend in pitch; call a loud whistled "tééoo" or "tuéét".

**Habitat.** Deciduous woodland and dense Chaco scrub, especially near terrestrial bromeliads; to 1800 m. In W Argentina, found up into Andes, where it occupies dense shrubby slopes similar to those used by *U. harterti* in Bolivia.

**Food and Feeding.** Arthropods; Orthoptera, Coleoptera and Diptera all recorded as forming part of diet. Usually forages solitarily. Items gleaned from ground, possibly also from low vegetation.

**Breeding.** Breeds during austral summer; eggs recorded in Oct-Feb and nestlings in Oct-Nov in Argentina. Presumably monogamous. Nest variable, stick nest built in bush or low tree, or placed in cavity or crevice in tree trunk, rocks or building, or old nest of *Furnarius* used; floor of nest-chamber thickly padded with hair, grasses, lichens, plant fibres, snake skins, and even bits of human refuse. Clutch 3-4 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common in much of its range. Occurs in Chancani Natural Reserve, in Argentina.

**Bibliography.** Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Esteban (1951b), Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), Fraga & Narosky (1985), Hartert & Venturi (1909), Hayes (1995), Kratter *et al.* (1993), Mazar Barnett & Pearman (2001), Narosky (1975b), Narosky & Di Giacomo (1993), Narosky *et al.* (1983), Navas & Bó (1987), Nellar (1993), Nores *et al.* (1983), Ochoa (1971), Olrog (1963a), Partridge (1953), de la Peña (1987, 1988, 1997), Remsen (2003a), Ridgely & Tudor (1994), Salvador (1988), Short (1975), Stotz *et al.* (1996), Wetmore (1926), Wetmore & Peters (1949), Zotta (1940).

## Genus EREMOBIUS Gould, 1839

### 21. Band-tailed Earthcreeper

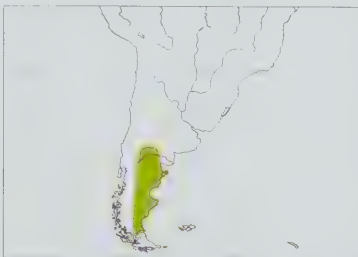
#### *Eremobius phoenicurus*

**French:** Upucerthie rougequeue **German:** Schwarzwand-Erdhacker **Spanish:** Bandurrita Patagónica

**Taxonomy.** *Eremobius phoenicurus* Gould, 1839, Port Desire, San Julián and Santa Cruz, east coast of Patagonia, Argentina.

Morphology suggests closest relationship to genus *Upucerthia*, but nest type is very different; considered by some authors to be closer to *Cinclodes*. Nest structure, however, suggests possible relationship to such genera as *Phacellodomus*, *Synallaxis*, *Pseudoseisura* and *Asthenes*, and plumage coloration, especially tail pattern, vaguely recalls those of some species in *Asthenes*. Monotypic.

**Distribution.** SW Argentina (Neuquén and Río Negro S to Santa Cruz) and extreme S Chile (NE Magallanes).



**Descriptive notes.** 16-17 cm; 28-34 g. Small earthcreeper with thin, straight, medium-length bill. Has white supercilium, dark eyestripe, more rufescent auriculars; crown and upperparts, including most of wings, uniform dull grey-brown; tail rounded, central rectrices mostly fuscous blackish, dull grey-brown at base, other rectrices with dark rufous base sharply demarcated from blackish distal portion, blackish progressively decreasing in extent towards outer feathers; throat whitish, greyer laterally, underparts pale dull grey-brown, distinct paler streaks on breast and flanks, undertail-coverts whitish; iris dark

brown; bill black or blackish-brown, base of lower mandible pale horn or greyish; tarsus and toes blackish-brown or blackish. Sexes alike. Juvenile has pale feather tips on forehead, unstreaked or only faintly streaked breast and belly. **VOICE.** Song a fast dry trill that sometimes ends with separate sharp "ti" notes; alarm a repeated, husky "suwee" or "wheet".

**Habitat.** Arid lowland scrub and temperate grassland, to 1200 m. Inhabits sparsely vegetated plains, plateaux and slopes; often associated with thorny *Monthea* shrubs.

**Food and Feeding.** Arthropods. Usually forages solitarily. Probes and gleans for food items in ground, grass clumps, cushion-plants, also in rock crevices.

**Breeding.** Breeds during austral summer; eggs recorded in Sept and nestlings in Jan. Presumably monogamous. Nest a large oval mass (c. 55 × 30 cm) of interwoven thorny twigs, side entrance with tunnel c. 25 cm long leading to rounded nest-chamber c. 12 cm in diameter, floor of which an interwoven mat of fine grasses, topped with layer of hair, spider webs, dried flowers and feathers; placed c. 1-2 m above ground near top of low bush (often *Monthea*, also *Schinus*, *Condalia*, or spiny cactus). Clutch 2-4 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common. Habitat within its range appears to be reasonably secure, with overgrazing probably the only form of anthropogenic disturbance.

**Bibliography.** Anon. (2003d), Canevari *et al.* (1991), Chebez *et al.* (1999), Contreras (1978), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Johnson (1967), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas



(1971), Olrog (1963a), de la Peña (1988), Peters (1923), Ridgely & Tudor (1994), Stotz *et al.* (1996), Vuilleumier (1980a, 1993a), Vuilleumier *et al.* (1993), Wetmore (1926), Zapata (1967).

Genus *CHILIA* Salvadori, 1908

22. Crag Chilia

*Chilia melanura*

**French:** Chilia des rochers      **German:** Rotbürzel-Erdhacker      **Spanish:** Chiricoca  
**Other common names:** Mountain Tococo

**Taxonomy.** *Enicornis melanura* G. R. Gray, 1846, no locality = Chile. Generally considered most closely related to *Eremobius* and *Upucerthia*, but has also been thought to be closest to *Cinclodes*. Two subspecies recognized.

**Subspecies and Distribution.**  
*C. m. atacamae* Hellmayr, 1925 - NC Chile (Atacama, Coquimbo).

*C. m. melanura* (G. R. Gray, 1846) - C Chile (Aconcagua S to Colchagua).

**Descriptive notes.** 18-19 cm; 31-40 g. Very straight bill. Nominate race has narrow whitish supercilium, dark brown lores and auriculars fringed whitish along lower edge; mostly darkish brown above, contrasting rufous rump and uppertail-coverts; extensive rufous wingband; tail mostly blackish-brown, rufous at base and on outer web of outer rectrix; throat whitish, breast dull smoky greyish, belly dull brown, flanks and undertail-coverts rufous; iris brown; upper mandible blackish, lower mandible pale grey with blackish tip; tarsus and toes blackish. Sexes alike. Juvenile has



pale edgings on back feathers, indistinct bars on underparts. Race *atacamae* is paler and more sandy, whiter supercilium often more distinct, upperwing-coverts greyish-brown instead of dusky brown, breast pale greyish with white streaking, flanks paler brown, bill narrower and shorter. **VOICE.** Song a short (1 second) staccato chatter of jumbled notes with 4-7 loud “teet” notes in middle; call a metallic, abrupt “ch” or “ch-ch”, often given as continuous chatter.

**Habitat.** Arid montane scrub; on steep, rocky slopes and cliffs with little or scattered clumps of vegetation, at 1400-3000 m; also arid low-

land scrub in winter.

**Food and Feeding.** Arthropods, some seeds. Usually solitary. Probes and gleans rocks and crevices for food items.

**Breeding.** Season presumed to be during austral spring-summer; eggs in Sept-Oct. Presumably monogamous. Nest a bulky globular mass of dry sticks, lined with feathers, placed in cavity under rock, occasionally in hole in cactus or earth bank. Clutch 3-4 eggs.

**Movements.** Mainly resident; downslope movements in winter.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Central Chile EBA. Uncommon to fairly common. Occurs in Cerro La Campana National Park. Habitat occupied is fairly remote, and appears therefore to be relatively immune to direct anthropogenic disturbance.

**Bibliography.** Araya & Chester (1993), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Johnson (1967), Marin (2003), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vuilleumier (1980a), Zyskowski & Prum (1999).









PLATE 13

inches 3  
cm 8



# Genus *CINCLODES* G. R. Gray, 1840

## 23. Stout-billed Cinclodes

### *Cinclodes excelsior*

**French:** Cinclode du paramo **German:** Schuppenbrust-Uferwipper **Spanish:** Remolinera Ecuatoriana  
**Other common names:** Short-billed/Paramo Cinclodes

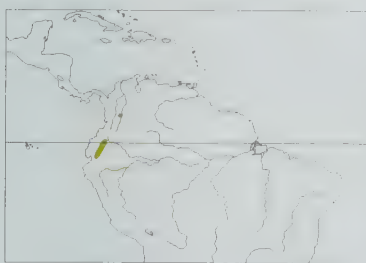
**Taxonomy.** *Cinclodes excelsior* P. L. Selater, 1860, Mount Chimborazo, 14,000 feet [c. 4270 m], Ecuador.

Sometimes placed in genus *Geositta*, and in the past in *Upucerthia*, but plumage, wing-raising display and foraging behaviour favour inclusion in present genus. Formerly treated as conspecific with *C. aricomae*, but differs in, especially, plumage and in micro-habitat use. Two subspecies recognized.

#### Subspecies and Distribution.

*C. e. columbianus* (Chapman, 1912) - C Andes of Colombia (Tolima).

*C. e. excelsior* P. L. Selater, 1860 - Andes from extreme SW Colombia (Nariño) S to S Ecuador (N Azuay).



**Descriptive notes.** 20-21 cm; 62-66 g. Large cinclodes with thick-based decurved bill, relatively short tail. Has long whitish supercilium extending from forehead to hindneck, dark brown face with some narrow pale shaft streaks; crown very dark brown, back to uppertail-coverts dark brown; wings dark brown, blackish-brown primary coverts, rufous bases of remiges and edges of tertials; tail rounded, dark brown, with increasing amount of dull rufous towards outer feather pairs; throat and malar area whitish with some faint scalloping, upper breast light brown with diffuse paler scalloping, lower breast and

undertail-coverts brownish with faint pale shaft streaks, flanks brown with pale shaft streaks, belly pale greyish-brown; iris brown to dark brown; bill black; tarsus and toes brownish-grey to blackish. Sexes alike. Juvenile has more mottled breast. Race *columbianus* is slightly darker above and paler below, rufous wingband more distinct. **Voice.** Song a high-pitched, trilled "tr-r-r-r-r-r-ree". Call a nasal "kiu" or "druut" or "ken-ee"; low twittering notes in flight.

**Habitat.** Rocky páramo grassland and semi-humid and humid montane scrub, usually near water or boggy meadows, but also in some barren areas with scattered bushes; also *Polylepis* groves. Occurs from 3200 m up to snow-line, to 5200 m. May require volcanic areas for nest-tunnel excavation.

**Food and Feeding.** Invertebrates, occasionally small vertebrates (small frogs); also some seeds. Forages solitarily or in pairs. Probes and digs in mud, moist soil and debris; occasionally gleans items from low foliage.

**Breeding.** Eggs in Nov in C Colombia; fledglings in Dec in Ecuador. Presumably monogamous. Wing-raising display while singing. Nest a thin layer of decayed vegetable matter at end of gently upward-sloping tunnel 0.7-1.1 m long, excavated in steep bank or road cutting, entrance mostly within 1 m of top of bank and often somewhat protected by overhanging vegetation, no noticeable chamber; in C Colombia prefers to excavate in pumiceous soil strata, which are more porous and friable than other soil types. Clutch probably 2 eggs.

#### Movements. Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Central Andean Páramo EBA. Uncommon to locally common. Occurs in Cotopaxi National Park and Las Cajas National Recreation Area, in Ecuador.

**Bibliography.** Anon. (2003g), Bond (1945), Carriker (1932), Chapman (1926), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Fjeldså *et al.* (1987), Graves & Arango (1988), Hilty & Brown (1986), Meyer de Schauensee (1945), Parker *et al.* (1982), Remsen & T aylor (1989), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salaman (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Todd (1948b), Vuilleumier (1980a).

## 24. Royal Cinclodes

### *Cinclodes aricomae*

**French:** Cinclode royal **German:** Weißkehl-Uferwipper **Spanish:** Remolinera Real

**Taxonomy.** *Upucerthia aricomae* Carriker, 1932, Aricoma Pass, 15,000 feet [c. 4570 m], Carabaya, Puno, Peru.

Has been placed in *Geositta*, but plumage and behaviour like those of present genus. Formerly treated as race of *C. excelsior*; justification for species rank rather weak, primarily plumage and micro-habitat differences. Monotypic.

**Distribution.** Very locally in Andes of S Peru (Aurimac, Cuzco, Puno) and W Bolivia (La Paz).

**Descriptive notes.** 20-21 cm; 50 g. Large cinclodes with thick-based decurved bill, relatively short tail. Has pale buffish supercilium from forehead to nape; crown, face and upperparts dark brown, bases of remiges rufous bordered with black, tail blackish; throat and malar area whitish with thin dark bars, underparts dark brown, breast broadly streaked whitish; iris dark brown to brown; bill black; tarsus and toes dark pinkish-grey to black. Differs from *C. excelsior* in darker back, considerably darker underparts, more buffy supercilium, blackish tail, more distinct wingband. Sexes alike. Juvenile undescribed. **Voice.** Song a very loud trill.

**Habitat.** Boggy areas next to steep rocky slopes in relatively humid *Polylepis-Gynoxis* woodland; 3500-4600 m.

**Food and Feeding.** Mostly invertebrates; Coleoptera (including Curculionidae) recorded. Small vertebrates (small frogs) occasionally taken; sometimes seeds. Solitary or in pairs. Probes among



rocks encrusted with mosses and lichens, in decaying wood, and in mossy ground in boggy areas; flakes off pieces of moss; also gleans invertebrates from surfaces.

**Breeding.** No precise information available. Season thought to begin in Dec; in Cordillera Vilcanota, pairs are territorial during austral winter. Suggested mean territory size c. 3-4 ha.

#### Movements. Resident.

**Status and Conservation.** CRITICAL. Known from only six localities; global population may total only a few hundred individuals. Threatened by clearance of *Polylepis* woodland, which has already disappeared from

one site (the type locality). Two localities are in officially protected areas in Bolivia, these being Puina, in Madidi National Park, and Ilampu Valley, in Cotapata National Park, but both of these are vulnerable to grazing and burning. Remaining patches, in Peruvian departments of Cuzco and Apurimac, are still being cleared by burning to improve pastures, and degraded by cutting for firewood; they receive no official protection. The species was undoubtedly much more widely distributed at one time; evidence is mounting that humid *Polylepis* woodland has been reduced dramatically during the last few thousand years of human exploitation.

**Bibliography.** Anon. (2003h), Bond (1945), Carriker (1932), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Engblom *et al.* (2002), Fjeldså (1987, 1991), Fjeldså & Kessler (1996), Fjeldså & Krabbe (1990), Fjeldså *et al.* (1987), Kessler (1995), Kessler & Driesch (1994), Parker & O'Neill (1980), Parker *et al.* (1982), Remsen & T aylor (1989), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Valqui (2000), Vogel & Davis (2002), Walker (2001), Wege & Long (1995).

## 25. Bar-winged Cinclodes

### *Cinclodes fuscus*

**French:** Cinclode brun **German:** Kurzschnabel-Uferwipper **Spanish:** Remolinera Común  
**Other common names:** Dusky Cinclodes

**Taxonomy.** *Anthus fuscus* Vieillot, 1818. "Less rare in the fields of Montevideo and Buenos Aires than in Paraguay."

Has been thought by some to form a superspecies with *C. comechingonus* and *C. pabsti*; often treated as conspecific with former, their breeding ranges evidently not overlapping. Sometimes considered also to include *C. olrogii* as a race, that taxon being very similar to races *riojanus* and *yzurietae* of present species. Proposed race *paramo* (from Nariño, in SW Colombia) described as differing from *oreobates* in having shorter wings and tail, but overlap in measurements is extensive. Further, within area assigned to race *albiventris*, plumage varies clinally from darker in N to paler in S; also, birds from drier areas are whiter than those from humid slope of Andes, and are potentially the "true" representatives of that race, leaving presumably the name *longipennis* (proposed for N populations) available for humid-slope birds; described race *rivularis*, of Junin region of Peru, supposedly differs from latter in less rufescent back, paler flanks and less heavily margined breast feathers, which matches some specimens from Junin region, but its type locality (Maraynioc) is at or near humid E slope; whether these two described forms are valid entities requires further study. Nine subspecies recognized.

#### Subspecies and Distribution.

*C. f. oreobates* Scott, 1900 - Colombia in Santa Marta Mts and E & C Andes (N Boyacá S to S Cundinamarca, and Cauca S to Nariño), and Andes of SW Venezuela (S Táchira); possibly also NW Ecuador (Carchi).

*C. f. heterurus* Madarász, 1903 - Andes of W Venezuela (S Lara, Trujillo, Mérida).

*C. f. albidiventris* P. L. Selater, 1860 - N Ecuador (S from Imbabura, possibly from Carchi) S to N Peru (Piura, Cajamarca).

*C. f. albiventris* (R. A. Philippi [Krumwiede] & Landbeck, 1861) - Andes from N Peru (Amazonas) S to Bolivia, N Chile (S to Antofagasta) and NW Argentina (Jujuy S to La Rioja).

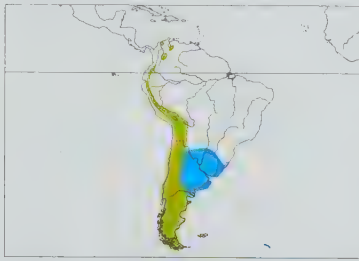
*C. f. tucumanus* Chapman, 1919 - NW Argentina (Tucumán).

*C. f. rufus* Nares, 1886 - NW Argentina (Campo de Arenal, in Catamarca).

*C. f. yzurietae* Nares, 1886 - NW Argentina (Sierra del Manchao, in SE Catamarca).

*C. f. riojanus* Nares, 1886 - NW Argentina (Sierra de Famatina, in La Rioja).

*C. f. fuscus* (Vieillot, 1818) - breeds C & S Chile (S from Atacama) and C & S Argentina (Mendoza S to Tierra del Fuego); migrates to S Brazil, SE Paraguay, Uruguay and N Argentina (N to Corrientes).



**Descriptive notes.** 15-19 cm; 24-35 g. Small cinclodes with relatively short bill. Nominale race has conspicuous light buffish-white supercilium, speckled forehead, dark grey-brown auriculars with paler shaft streaks; crown dark grey-brown, upperparts dark brown, wing-coverts with broad buffish edges; dark fuscous remiges, tawny-rufous patch at base forming narrow wingband; tail slightly rounded to nearly square, central rectrices like upperparts, rest blackish-brown, outer three pairs with progressively larger pale tawny tips, outer web of outer rectrix all pale dull tawny; malar area bright white, flared posteriorly, blending into pale

tawny side of neck; chin white, throat white with thin dark scalloping, breast dull pale brown with faint buff shaft streaks, belly whitish-buff, flanks extensively dull brown, undertail-coverts mottled dull brown and buff; iris brown or dark brown; bill dark brown to blackish, often paler base of lower mandible; tarsus and toes blackish to dark brownish. Sexes alike. Juvenile is more richly coloured, most feathers on underparts with dark edging. Races tend to be more brownish than nominate, lacking obvious greyish tones dorsally; *yzurietae* has darker brown upperparts, especially crown, and much whiter breast; *rufus* differs from others in having more rufescent upperparts, more ochraceous belly, more rufescent flanks, richer brown wings and tail; *riojanus* is darker chocolate-brown above and browner on breast than other races, especially last; *tucumanus* resembles previous but has more



reddish back, paler underparts, deep buff wingband; *albiiventris* has reddish tinge above, whitish underparts, with wingband paler, almost white, undertail-coverts white; *albidiventris* has dark back with even more reddish tones, brighter outer webs of outer rectrices, deep cinnamon wingband, browner breast with more conspicuous pale markings, buff underwing-coverts; *oreobates* resembles previous, but less rufescent above, paler wingband and webs of outer rectrices, supercilium less buffy, throat more spotted, underparts whiter; *heterurus* differs from last in having outer three rectrices almost entirely bright cinnamon, middle rectrices more rufescent, wingband deeper cinnamon. VOICE. Song a short, fast, dry trill, "t-r-r-r-r-r-r-r-r-r", lasting c. 2 seconds, often introduced by call notes, given from rock or ground, sometimes in flight. Call a sharp "pfip", sometimes doubled; also series of high-pitched tinkling notes; flight call a sharp whistled "tsip".

**Habitat.** *Páramo* grassland, *puna* grassland, southern temperate grassland, arid montane scrub; variety of open, grassy habitats, from *páramo* and *puna* grassland to Patagonian steppes and beaches, usually near water, especially bogs and streams. Common around human habitations. Sea-level to 5000 m.

**Food and Feeding.** Invertebrates; also seeds. In detailed analysis of stomach contents of birds from a river island in Argentina during austral winter, diet found to be strongly dominated by aquatic invertebrates, with chironomid midges (*Chironomus domizii*) forming 60% of all organisms identified, also many molluscs (Planorbidae); seeds, mainly of grasses and Compositae, also strongly represented, accounting for 23% of total food items; only other items represented by more than two individuals were weevils (Curculionidae). Additional prey recorded include Coleoptera of families Dytiscidae, Hydrophilidae, Carabidae, Chrysomelidae, Tenebrionidae, also Hemiptera (e.g. Reduviidae), wasps (Vespidae), ants (*Pheidole*), lepidopteran larvae, various flies (Diptera), snails (*Littoridina*). Forages singly or in pairs. Runs or hops rapidly. Gleans from or probes in ground, mud, shallow water, rocks, beach debris, grass, and dung.

**Breeding.** Breeds during austral spring-summer in S portions of range, but timing uncertain towards equator; eggs in Sept-Jan in S Peru, Chile and Argentina, and in Apr in Bolivia; fledglings in Feb in N Colombia, Mar in N Ecuador, and Nov-Jan in S Ecuador, Peru and Chile. Monogamous. Wing-flapping display while singing from perch. Nest at end of tunnel 0.4-1 m long excavated in embankment, or in crevice in rocks or hole in wall of building or other structure, nest-chamber with pad c. 8 cm wide of grasses and some hair. Clutch 2-3 eggs.

**Movements.** Most populations largely resident; some downslope movement in winter or during bad weather. Nominate race largely migratory, populations migrating N or moving to lower altitudes after breeding.

**Status and Conservation.** Not globally threatened. Common and widespread throughout most of range; the commonest member of genus in many places. In many areas occupied by this species, its habitats are subject to, at most, only minimal anthropogenic disturbance; probably benefits from effects of grazing.

**Bibliography.** Anon. (2003d), Aravena (1928), Araya & Chester (1993), Belton (1984), Beltzer (1997), Beltzer & Neffen (1989), Bond (1945), Calchi (1995), Canevari *et al.* (1991), Chesser (1994), Cory & Hellmayr (1925), Esteban (1951b), Fiora (1933), Fjeldsá & Krabbe (1990), Fjeldsá & Majer (1996), Hayes (1995), Hilty (2003a), Hilty & Brown (1986), Humphrey *et al.* (1970), Johnson (1967), Koepeke (1954, 1958, 1970), Morrison (1939), Naka *et al.* (2000), Narosky *et al.* (1983), Nores (1986), Nores & Yzurieta (1983a), Norton (1975), O'Neill & Parker (1978), Ochoa (1971), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Parmelee & Rasmussen (1994), Pearman (1994g), de la Peña (1983b, 1987, 1988), Philippi *et al.* (1954), Remsen (1985, 2003a), Remsen & Traylor (1989), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salaman (1994), Salvador (1990, 1992), Sick (1993, 1997), Stotz *et al.* (1996), Todd (1948b), Todd & Carriker (1922b), Vuilleumier (1985), Vuilleumier & Ewert (1978), Walker (2001), Wetmore (1926), Zimmer (1930), Zotta (1932, 1936), Zotta & Gavio (1944).

## 26. Cordoba Cinclodes

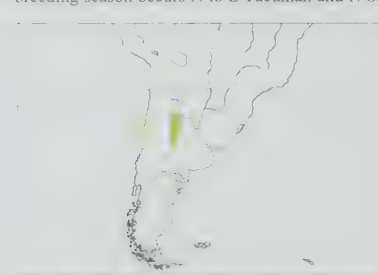
### *Cinclodes comechingonus*

**French:** Cinclode gris **German:** Rostspitzen-Uferwippen **Spanish:** Remolinera de Córdoba  
**Other common names:** Chestnut-winged/Comechingones/Sierran Cinclodes

**Taxonomy.** *Cinclodes comechingonus* Zotta and Gavio, 1944, Sierras de Comechingones, 2400 m, 7 km west of La Paz, Córdoba, Argentina.

Has been thought by some to form a superspecies with *C. fuscus* and *C. pabsti*; often treated as conspecific with former, with no evident overlap in breeding ranges. Monotypic.

**Distribution.** NC Argentina (Córdoba, NE San Luis, and recently found in Mendoza); in non-breeding season occurs N to E Tucumán and N Santiago del Estero.



**Descriptive notes.** 17 cm; 25-32 g. Has buff-white supercilium, dark grey-brown band from lores to rear auriculars; crown and upperparts grey-brown; breast dark rufous band on base of remiges outlined in black; tail nearly square, dark grey, outer feather pairs blackish with pale rufous tips; throat white, flanks light brown, rest of underparts pale buff-white, throat and breast with dark scalloping; iris brown; bill black, yellowish base of lower mandible; tarsus and toes black. Distinguished from similar *C. fuscus* by broader, more rufous wingband (brighter and more extensive than in all other congeners), greyer upperparts, paler under-

parts, yellow on bill. Sexes alike. Juvenile undescribed. VOICE. Song a trill, evidently more complex than that of *C. fuscus* but further study required.

**Habitat.** Open grassy areas, often rocky, at 1600-2800 m; recently found up to 3300 m in vicinity of Aconagua. Not so closely tied to water as are other members of genus.

**Food and Feeding.** Reported food items are weevils (Curculionidae), Hemiptera, Lepidoptera (*Colias*), also hydrobiid snails (*Littoridina*) and molluscs (*Sphaerium*); also seeds. Usually in pairs. Gleans invertebrates from ground, grass and rocks.

**Breeding.** Season during austral spring-summer; eggs in Nov-Dec, nestlings in Nov and fledglings in Jan. Monogamous; reported to remain paired throughout year. Nest at end of tunnel c. 0.5 m long excavated in bank, or in crevice in rocks, nest-chamber padded with grasses, hairs and leaves. Clutch 2 eggs.

**Movements.** Parts of the population descend to lower elevations (to 1000 m) or migrate N after breeding.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Sierras Centrales de Argentina EBA. Common within limited range. Habitat occupied by this species is relatively free from human disturbance other than grazing.

**Bibliography.** Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Chesser (1994), Esteban (1951b), Fjeldsá & Krabbe (1990), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas & Bó (1987), Navas &

Camperi (1999), Nellar (1993), Nores & Yzurieta (1981), Nores *et al.* (1983), Olrog (1963a), de la Peña (1987, 1988), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Vuilleumier (1980a), Zotta & Gavio (1944).

## 27. Long-tailed Cinclodes

### *Cinclodes pabsti*

**French:** Cinclode à longue queue **Spanish:** Remolinera Colilarga  
**German:** Santa Catarina-Uferwippen  
**Other common names:** Pabst's Cinclodes

**Taxonomy.** *Cinclodes pabsti* Sick, 1969, between Tainhas and Taimbézinho, 16 km north-east of Tainhas along road to Cambaré, c. 1000 m, Rio Grande do Sul, Brazil.

Plumage similarities and biogeography suggest that closest relationship is with *C. fuscus*. Has been thought by some to form a superspecies with that and with *C. comechingonus*. Monotypic.

**Distribution.** Extreme SE Brazil (SE Santa Catarina, NE Rio Grande do Sul).



**Descriptive notes.** 21-22 cm; 49-55 g. Large cinclodes with fairly long, straight bill, relatively long tail. Has long and conspicuous white supercilium, dark band from lores to rear auriculars; greyish-brown above, crown slightly darker than back; two indistinct but broad cinnamon-buff wingbars and wingband; tail dark brown, tips of outer rectrices buff or ochraceous; throat white, contrasting with pale yellowish buffy-brown underparts; iris brown; bill black, sometimes pale base of lower mandible; tarsus and toes grey to black. Sexes alike. Juvenile undescribed. VOICE. Song a prolonged trill, increasing in volume towards end, given

from perch or in flight; call a descending "iseeo".

**Habitat.** Southern temperate grassland, also pastures and agricultural land; open grassland, often rocky and often near houses, usually near water; 750-1700 m.

**Food and Feeding.** Arthropods and presumably other invertebrates, gleaned from ground, grass, and water's edge. Forages singly or in pairs.

**Breeding.** Breeds during austral spring-summer; nestlings in Sept and Nov-Dec. Presumably monogamous. Nest a platform of grass and feathers placed in rock crevice, or at end of tunnel excavated in embankment, usually in hard, rocky soil, occasionally in hole in house. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Atlantic Forest Mountains EBA. Uncommon to fairly common within its small geographical range; uncommon in Aparados da Serra National Park. Evidently maintains reasonably healthy populations in areas subjected to moderate human disturbance.

**Bibliography.** Belton (1984), Chesser (1994), Cordeiro (2001), Mayr & Vuilleumier (1983), Parker & Goerck (1997), Pinto (1978), Ridgely & Tudor (1994), Sick (1969b, 1973, 1985d, 1993, 1997), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

## 28. Olrog's Cinclodes

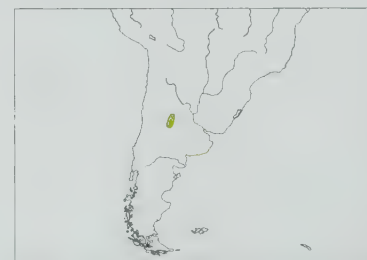
### *Cinclodes olrogi*

**French:** Cinclode d'Olrog **German:** Zweifarb-Uferwippen **Spanish:** Remolinera de Olrog

**Taxonomy.** *Cinclodes olrogi* Nores and Yzurieta, 1979, Pampa de Achala, Sierras Grandes de Córdoba, 2200 m, Argentina.

Has been thought to form a superspecies with *C. oustaleti*. Considered conspecific with latter by some authors and with *C. fuscus* by others, but plumage rather distinctive; further research needed. Monotypic.

**Distribution.** NC Argentina in W Córdoba (Sierras Grandes, Sierras de Comechingones) and NE San Luis (Sierras de San Luis).



**Descriptive notes.** 17 cm; 24-32 g. Small, fairly dark cinclodes with medium-length, slightly decurved bill. Has white supercilium, blackish-brown crown, lores and auriculars; upperparts dark grey-brown with faint chestnut tinge; wings darker, striking white band across base of remiges; tail dark grey-brown, darker at sides, tips of outer rectrices dull rufous; throat and breast white, some dark scaling on breast, rest of underparts pale dull brown; no information on bare-part colours, probably all dark brown to blackish. Sexes alike. Juvenile undescribed. VOICE. No information.

**Habitat.** Open grassy and rocky areas, usually near streams and lakes; 1600-2800 m.

**Food and Feeding.** Arthropods and presumably other invertebrates, gleaned from ground, rocks and mud. Solitary or in pairs.

**Breeding.** Breeds during austral spring-summer; eggs and nestlings in Nov-Dec. Presumably monogamous. Nest at end of tunnel c. 0.3-0.5 m long excavated in bank, or in rock crevice or in hole in structure, nest-chamber with pad c. 6 cm wide of plant fibres and hair. Clutch 2 eggs.

**Movements.** Mainly resident; some post-breeding downslope movement, to 900 m.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Sierras Centrales de Argentina EBA. Common within its small geographical range. Habitat occupied is relatively free from human disturbance; grazing appears to be the only potential problem.

**Bibliography.** Canevari *et al.* (1991), Chebez *et al.* (1999), Fjeldsá & Krabbe (1990), Narosky *et al.* (1983), Navas & Bó (1987), Nellar (1993), Nores (1986), Nores & Yzurieta (1979a), Nores *et al.* (1983), de la Peña (1987), Ridgely & Tudor (1994), Stotz *et al.* (1996), Stattersfield *et al.* (1998), Vuilleumier & Mayr (1987).

## 29. Grey-flanked Cinclodes

### *Cinclodes oustaleti*

**French:** Cinclode d'Oustalet **German:** Graufanken-Uferwippen **Spanish:** Remolinera Chica  
**Other common names:** Oustalet's Cinclodes



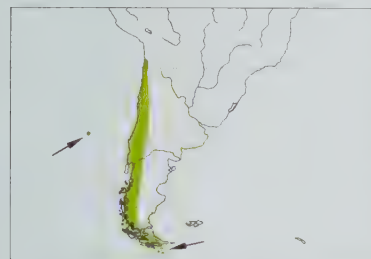
**Taxonomy.** *Cinclodes oustaleti* Scott, 1900, Valparaíso, central Chile. Has been thought to form a superspecies with *C. olrogii*. Plumage similarities, however, suggest that it may be most closely related to *C. patagonicus* or to the superspecies formed by *C. taczanowskii* and *C. nigrofumosus*. Three subspecies recognized.

**Subspecies and Distribution.**

*C. o. oustaleti* Scott, 1900 - Chile (Antofagasta S to Aisén) and W Argentina (Mendoza S to W Chubut).

*C. o. baekstroemii* Lönnberg, 1921 - Juan Fernández Is, off C Chile.

*C. o. hornensis* Dabbene, 1917 - breeds on Desolación I (S Chile), Tierra del Fuego and Cape Horn Archipelago; some migrate N to S Argentina and C Chile.



**Descriptive notes.** 17-18 cm; 22-31 g. Small, dark cinclodes with medium-length, slightly decurved bill. Nominat race has buff supercilium, speckled at front, blackish-brown loreal area and auriculars; crown dark greyish-brown, upperparts rich dark brown; wings dark brown like back, whitish bend of wing, tawny-rufous and blackish-brown primary coverts, some rufous at base of remiges; tail slightly rounded to nearly square, blackish-brown, small rufous tips of outer rectrices; throat and malar area whitish with dark scalloping, breast dull dark grey-brown, fairly conspicuous pale shaft spots on upper breast, becoming short and faint streaks

on lower breast, belly paler and browner, whitish centrally, flanks and undertail-coverts rich dark brown with some whitish tips; iris dark brown to black; bill blackish or blackish-horn; tarsus and toes blackish-brown. Sexes alike. Juvenile undescribed. Race *hornensis* is darker grey above, much less richly coloured, also greyer and less brown below, especially on flanks; *baekstroemii* is tinged rufous on sides, flanks and undertail-coverts. VOICE. Song apparently undescribed.

**Habitat.** Open grassy and rocky areas, from sea-level to 4200 m. In montane areas, often found near streams.

**Food and Feeding.** Arthropods and presumably other invertebrates, gleaned from ground, grass and rocks. Forages singly or in pairs.

**Breeding.** Breeds during austral spring-summer; eggs in Oct in S Chile, and nestlings in Oct in CW Argentina. Presumably monogamous. Nest at end of tunnel excavated in bank or in crevice in rocks, often overlooking stream, nest-chamber with pad of grasses and hair. Clutch 2-3 eggs.

**Movements.** Many populations apparently resident, but much downslope movement in winter. S race *hornensis* at least partially migratory, some moving N after breeding, with records to S Argentina (Chubut) and C Chile (Chiloé, Cautín, Concepción).

**Status and Conservation.** Not globally threatened. Uncommon to fairly common. Occurs in Vicente Pérez Rosales National Park, in Chile, and in Tierra del Fuego National Park, in Argentina. Habitat occupied is subject to only minimal human disturbance other than grazing.

**Bibliography.** Anon. (2003d), Araya & Chester (1993), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Chesser (1994), Contreras (1975), Cory & Hellmayr (1925), Esteban (1951b), Fjeldså & Krabbe (1990), Grigera *et al.* (1996), Humphrey *et al.* (1970), Johnson (1967), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas & Bó (1987), Navas & Camperi (1999), Olrog (1948, 1963a), de la Peña (1988), Ridgely & Tudor (1994), Stotz *et al.* (1996), Wetmore (1926), Zotta (1938).

## 30. Dark-bellied Cinclodes

### *Cinclodes patagonicus*

**French:** Cinclode à ventre sombre

**Spanish:** Remolinerá Araucana

**German:** Streifenbrust-Uferwippler

**Other common names:** Patagonian Cinclodes

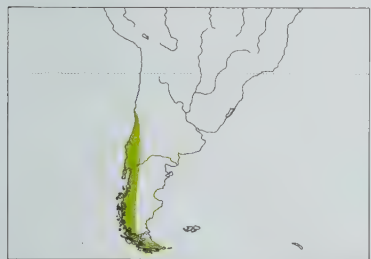
**Taxonomy.** *Motacilla patagonica* J. F. Gmelin, 1789, Tierra del Fuego.

Plumage similarities suggest that it is most closely related to *C. taczanowskii*, *C. nigrofumosus* and *C. antarcticus*. Race *chilensis* poorly differentiated, possibly not diagnosable. Two subspecies recognized.

**Subspecies and Distribution.**

*C. p. chilensis* (Lesson, 1828) - SC Chile (Aconcagua S to N Aisén) and W Argentina (Mendoza S to N Santa Cruz).

*C. p. patagonicus* (J. F. Gmelin, 1789) - S Chile (from NC Aisén) and S Argentina (from S Santa Cruz) S to Tierra del Fuego.



**Descriptive notes.** 18-20 cm; 37-54 g. Fairly large, dark cinclodes with long, slightly decurved bill. Nominat race has conspicuous white supercilium extending narrowly to forehead, very dark brown loreal area and auriculars, latter with some narrow whitish shaft streaks; crown very dark brown, upperparts slightly paler; wings dark brown, blackish-brown primary coverts, some pale rufous-tinged white at base of remiges; tail slightly rounded, dark brown, outer three feather pairs with tawny-whitish tips increasing in extent laterally; malar area white with some dark speckling, throat whitish with faint flecking, underparts dull

dark brown, conspicuous pale shaft spots on upper breast, becoming long streaks on lower breast and upper belly, lower belly more or less unmarked, undertail-coverts with whitish tips; iris dark brown; bill, tarsus and toes brown to blackish. Sexes alike. Juvenile has pale-edged back feathers, broader and more diffuse streaks below restricted to breast. Race *chilensis* has tips of outer rectrices more buffy, underparts browner, reduced streaking on belly. VOICE. Song a long, complex series of musical notes and trills; call a sharp "tjit", sometimes in series.

**Habitat.** Coastal rocky beaches, shores of lakes, rivers, and streams; sea-level to 2500 m.

**Food and Feeding.** Invertebrates, gleaned from ground, rocks, beach debris and edge of water. Forages solitarily or in pairs.

**Breeding.** Season evidently during austral spring-summer; eggs recorded in Sept-Jan, nestlings in Dec and fledglings in Nov-Jan. Presumably monogamous. Wing-raising display while singing. Nest at end of tunnel c. 1 m long excavated in bank, or in abandoned burrow, in hole or crevice in rocks or hollow log, or in hole or ledge in building or other structure, nest-chamber with pad of grass and feathers. Clutch 2-3 eggs.

**Movements.** Mostly resident; some downslope movement in winter. Apparently leaves Tierra del Fuego after breeding, but S limit of all-year range uncertain.

**Status and Conservation.** Not globally threatened. Fairly common and widespread throughout range. Occurs in Vicente Pérez Rosales and Nahuelbuta National Parks, in Chile, and in Tierra del Fuego National Park, in Argentina. Able to exploit a variety of water-edge habitats, and not thought likely to become threatened in the near future.

**Bibliography.** Araya & Chester (1993), Canevari *et al.* (1991), Chebez *et al.* (1999), Contreras (1975), Cory & Hellmayr (1925), Esteban (1951b), Fjeldså & Krabbe (1990), Grigera *et al.* (1996), Humphrey *et al.* (1970), Johnson (1967), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olrog (1963a), Parmelee & Rasmussen (1994), de la Peña (1988), Philippi *et al.* (1954), Ridgely & Tudor (1994), Stotz *et al.* (1996), Vuilleumier (1985).

## 31. Surf Cinclodes

### *Cinclodes taczanowskii*

**French:** Cinclode de Taczanowski

**Spanish:** Remolinerá Costera Peruana

**German:** Nördlicher Felsuferwippler

**Other common names:** Peruvian Seaside/Taczanowski's Cinclodes

**Taxonomy.** *Cinclodes taczanowskii* Berlepsch and Stolzmann, 1892, Chorillos, near Lima, Peru. Forms a superspecies with *C. nigrofumosus* and may be conspecific; no indication that difference between the two is any greater than that found among races of e.g. *C. fuscus*. Monotypic.

**Distribution.** Coast of C & S Peru (Ancash S to Tacna).



**Descriptive notes.** 21-22 cm; 62-67 g. Large, dark cinclodes with relatively short, straight bill. Has hint of indistinct brown supercilium; rest of face dark brown with pale shaft streaking, crown blackish-brown, faint brown shaft spots on forehead and streaks on rest of crown; back dull dark brown, rump and uppertail-coverts slightly paler; wing-coverts dark brown with pale brown tips, remiges fuscous to blackish with pale rufous and whitish edgings at bases (dull wingband); tail rounded, blackish-brown, outer three feathers pairs with progressively larger pale dull rufous terminal spots; throat and malar area dull brownish with narrow whitish streaks or

spots; underparts dull brown, upper breast with short, fine pale shaft streaks, lower breast and belly similar but streaks elongated and less distinct, vanishing on lower belly, undertail-coverts plain; iris dark brown; bill blackish to dark brownish; tarsus and toes dark greyish-brown. Differs from *C. nigrofumosus* in somewhat paler coloration, lack of white supercilium and throat. Sexes alike. Juvenile not described. VOICE. Song a long, loud trill; call described as abrupt "chec".

**Habitat.** Coastal rocky beaches; mainly in intertidal areas. One of the very few truly marine species in the Passeriformes.

**Food and Feeding.** Invertebrates; molluscs, crabs and isopods recorded in diet. Forages solitarily or in pairs. Gleans items from rocks and sand; often follows retreating waves.

**Breeding.** Presumably monogamous. Nest placed in crevice in coastal rocks; nest is cup of woven plant matter, mainly filamentous algae (e.g. *Chaetomorpha*, *Cladophora*, *Bryopsis*) and some feathers. No further information available.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Tumbesian Region EBA and Peru-Chile Pacific Slope EBA. Uncommon to fairly common within limited geographical range. Occurs in Paracas National Park and Pisco. Along with *C. nigrofumosus*, this is probably the most maritime of all passeriform species in terms of feeding habitats; nesting habitat, however, is unknown and requires investigation. Within range occupied by this species, coastal habitat is generally insulated from most types of human disturbance.

**Bibliography.** Cory & Hellmayr (1925), Koeppke (1954, 1961a, 1970), Parker *et al.* (1982), Paynter (1971), Remsen (2003a), Ridgely & Tudor (1994), Short & Morony (1969), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Tovar (1968), Vuilleumier (1980a).

## 32. Seaside Cinclodes

### *Cinclodes nigrofumosus*

**French:** Cinclode du ressac

**Spanish:** Remolinerá Costera Chilena

**German:** Südlicher Felsuferwippler

**Other common names:** Chilean Seaside/d'Orbigny's Cinclodes

**Taxonomy.** *Uppucerthia nigro-fumosa* d'Orbigny and Lafresnaye, 1838, Cobja, "Bolivia" (= northern Chile).

Forms a superspecies with *C. taczanowskii* and may be conspecific; no indication that difference between the two is any greater than that found among races of e.g. *C. fuscus*. Monotypic.

**Distribution.** Coast of N & C Chile from Arica S to Valdivia, including I de los Pájaros and Mocha I.



**Descriptive notes.** 21-22 cm; 63-67 g. Large, very dark cinclodes with relatively short, straight bill. Has whitish supercilium, blackish lores and auriculars; crown and upperparts blackish-brown, wing-coverts with slightly less dark edgings and tips; remiges blackish with light rufous and whitish edgings at bases (dull wingband); tail rounded, blackish, outer three feathers pairs with progressively larger pale rufous terminal spots; throat and malar area to lower neck side white, underparts dark grey, upper breast with white spots, central breast to belly and flanks with white shaft streaks; iris brown to dark brown; bill blackish, lower

mandible sometimes with grey base; tarsus and toes brownish-grey to blackish. Differs from *C. taczanowskii* in darker appearance, contrasting white supercilium and throat. Sexes alike. Juvenile not described. VOICE. Song a long, loud trill.

**Habitat.** Coastal rocky beaches, mainly in intertidal areas. One of the very few truly marine species in the Passeriformes.



**Food and Feeding.** Invertebrates, including worms, crabs, molluscs, sea urchins (Echinoidea), gasteropods; also small fish. Forages singly or in pairs; occasionally associates with shorebird (Charadriiformes) flocks. Gleans and pecks invertebrates from intertidal rocks and beach debris; takes small fish stranded in tidal pools. Is apparently responsible for maintaining polymorphism in shell colour of the limpet *Scurria variabilis*, a major prey item, by removing contrasting individuals from accessible rocks.

**Breeding.** Season apparently during austral spring-summer; eggs in Sept. Presumably monogamous. Nest in hole or crevice in rocks in rocky coastal promontory; sometimes at end of tunnel excavated in bluff overlooking beach. Clutch 3-4 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare to fairly common within limited geographical range. In terms of feeding habitats, this species and *C. taczanowskii* are probably the most maritime of all passeriforms. Coastal habitat within its range appears to be generally well insulated from most types of anthropogenic disturbance.

**Bibliography.** Anon. (2003e), Araya & Chester (1993), Barros (1964), Cory & Hellmayr (1925), Hockey *et al.* (1987), Johnson (1967), Koepeke (1970), Marin (2003), Parker *et al.* (1982), Paynter (1971), Ridgely & Tudor (1994), Short & Morony (1969), Stotz *et al.* (1996), Vuilleumier (1980a).

### 33. Blackish Cinclodes

#### *Cinclodes antarcticus*

**French:** Cinclode fuligineux **German:** Rußbrauner-Uferwipper **Spanish:** Remolinera Negra  
**Other common names:** Tussock-bird; Falkland Islands Cinclodes (*antarcticus*)

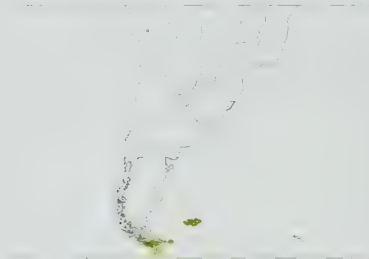
**Taxonomy.** *Certhia antarctica* Garnot, 1826, Falkland Islands.

Close relationship to the superspecies formed by *C. taczanowskii* and *C. nigrofumosus* or to *C. patagonicus* suggested by plumage and ecological similarities; alternatively, considered by some to represent a distinct lineage within the genus on basis of general morphology. Two subspecies recognized.

**Subspecies and Distribution.**

*C. a. maculirostris* Dabbene, 1917 - extreme S South America, on Dawson I, Brecknock Peninsula (SW Tierra del Fuego), Navarino I, Cape Horn Archipelago and Staten I.

*C. a. antarcticus* (Garnot, 1826) - Falkland Is.



ee-ee-ee. Call "chip".

**Habitat.** Coastal rocky beaches, especially in vicinity of colonies of marine mammals and seabirds. In Falkland Is also extends inland in tussock grass (*Poa flabellata*) and around human habitations, occurring from sea-level to 100 m.

**Food and Feeding.** Mostly arthropods and marine invertebrates, including amphipods, isopods, Diptera and their larvae, and Orthoptera (Rhaphidophoridae). More omnivorous in Falkland Is, where recorded as eating cracked eggs of penguins (Spheniscidae) and cormorants (*Phalacrocorax*), also fish scraps and other food regurgitated by penguins. Forages singly or in pairs. Gleans food items from beaches, especially from kelp debris, in which it pecks holes and then pulls invertebrates through; also gleans invertebrates from seabird nests and excrement, and around beached marine mammals; leaps upwards to capture flies from air. Forages on floating kelp beds in Falklands, where also closely follows humans walking on beaches and chases invertebrates disturbed by them.

**Breeding.** Season during austral spring-summer; eggs recorded in Oct-Jan and nestlings in Nov-Jan in Falkland Is; single-brooded. Monogamous. Wing-flapping song display typical of genus. Following data all from Falklands. Nest at end of tunnel excavated in bank overlooking beach, or in hole or crevice in coastal rocks or boulders, occasionally in old building, or in hole in log or building, in burrow of Common Diving-petrel (*Pelecanoides urinatrix*), or in nook under or in building; nest-chamber lined with dried grasses, root fibres and some feathers, with material added even during nestling period. Clutch 2-3 eggs; incubation period c. 16 days; both parents feed nestlings, nest sanitation minimal, nestling period 25 days.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Southern Patagonia EBA. Uncommon to locally common. Occurs in Kidney Island Reserve, in Falkland Is. Was almost certainly more widespread formerly, but is now largely confined to islands free of introduced mammalian predators; this species' renowned tameness evidently makes it exceptionally vulnerable to terrestrial predators, particularly cats and rats (*Rattus*).

**Bibliography.** Anon. (1995), Araya & Chester (1993), Canevari *et al.* (1991), Cawkill & Hamilton (1961), Chebez (1994), Chebez *et al.* (1999), Cory & Hellmayr (1925), Esteban (1951b), Humphrey *et al.* (1970), Johnson (1967), Mazar Barnett & Peaman (2001), Narosky *et al.* (1983), Olrog (1963a), de la Peña (1988), Pettingill (1973), Reynolds (1934, 1935), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vuilleumier (1993b), Zotta (1938).

### 34. White-winged Cinclodes

#### *Cinclodes atacamensis*

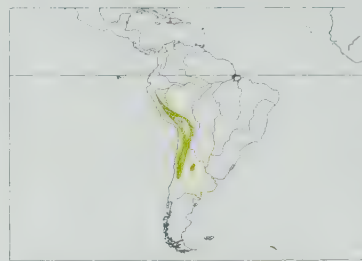
**French:** Cinclode à ailes blanches **Spanish:** Remolinera Castaña  
**German:** Schwarzschwanz-Uferwipper

**Taxonomy.** *Upuarthia* [sic] *atacamensis* R. A. Philippi [Krumwiede], 1857, San Pedro de Atacama, Antofagasta, Chile. Two subspecies recognized.

**Subspecies and Distribution.**

*C. a. atacamensis* (R. A. Philippi [Krumwiede], 1857) - Andes from C Peru (Ancash, Huánuco, Pasco) S to C Chile (S locally to Santiago) and through Andes of Bolivia to NW Argentina (S to Mendoza).

*C. a. schocolatinus* Reichenow, 1920 - WC Argentina (Córdoba, San Luis).



**Descriptive notes.** 19-20 cm; 45-56 g. Fairly large, contrastingly marked cinclodes with long, decurved bill. Has whitish supercilium, brownish-grey loreal area, greyish-brown auriculars with reddish tones; crown greyish-brown, upperparts rich reddish-brown; dark reddish-brown wing-coverts, white bend of wing, blackish remiges with white bases (conspicuous white wingband); tail slightly rounded, central rectrices dark fuscous brown, paler along shaft, rest blackish-brown with white terminal spots becoming progressively larger towards outer feathers; throat and malar area whitish with some faint darker flecking (especially at side), breast and sides buffy greyish, blending to brownish-grey belly, faint pale shaft streaks and flecks along upper breast becoming elongated and much less conspicuous posteriorly, flanks rich brown, undertail-coverts mottled brown and greyish-white; iris dark brown; bill blackish to dark horn; tarsus and toes dusky brown. Sexes alike. Juvenile has pale-edged lower back feathers, less distinct breast markings. Race *schocolatinus* is darker brown above, greyer below, sides and flanks dark brown. **VOICE.** Song a trill; call a loud, whistled "wheel".

**Habitat.** *Puna* grassland and rocky or shrubby slopes, mostly at 2800-4500 m, locally down to 2200 m; almost always at edge of clear, flowing streams and trickles.

**Food and Feeding.** Reported dietary items are Coleoptera (Elmidae), Lepidoptera larvae, spiders, and snails (*Littoridina*). Solitary or in pairs. Gleans invertebrates from ground and mud, usually at edge of water.

**Breeding.** Season apparently during austral spring-summer; eggs in Nov and nestlings in Nov-Dec in Chile and Argentina; nestlings in Oct in S Peru; fledglings in Nov-Dec. Presumably monogamous. Nest a pad c. 8-10 cm wide and c. 2 cm deep of dry grasses and lined with hair, in chamber c. 11 cm in diameter placed at end of tunnel c. 1 m long excavated in bank, or in crevice in rocks or man-made structure. Clutch 2 eggs.

**Movements.** Mostly resident; some post-breeding downslope movement by race *schocolatinus* and other populations in extreme S of range. One anomalous record from coastal SW Peru, presumably involving vagrant.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common. Has comparatively large geographical range. Nature of habitat occupied by this species and its altitudinal range render it relatively insulated against human disturbance other than overgrazing.

**Bibliography.** Araya & Chester (1993), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Cory & Hellmayr (1925), Esteban (1951b), Fjeldsá & Krabbe (1990), Fjeldsá & Majier (1996), Hughes (1980), Johnson (1967), Koepeke (1954, 1970), Krabbe *et al.* (1996), Mazar Barnett & Pearman (2001), Morrison (1939), Narosky *et al.* (1983), Nores & Yzurieta (1981), Nores *et al.* (1983), Olrog (1963a), Parker *et al.* (1982), Partridge (1953), Peña (1961), de la Peña (1983b, 1987, 1988), Remsen (2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Tudor (1994), Salvador (1990), Salvador & Narosky (1984), Short & Morony (1969), Stotz *et al.* (1996), Walker (2001), Zimmer (1930), Zotta (1940).

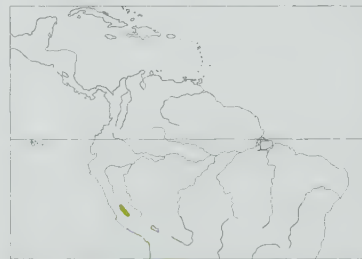
### 35. White-bellied Cinclodes

#### *Cinclodes palliatus*

**French:** Cinclode à ventre blanc **Spanish:** Remolinera Ventriblanca  
**German:** Weißbauch-Uferwipper

**Taxonomy.** *Cillurus palliatus* Tschudi, 1844, Montaña de Vitoc, near Hacienda Pachapata, Junín, Peru. Suggested by some as being most closely related to *C. atacamensis* on basis of plumage similarities. Monotypic.

**Distribution.** High Andes of C Peru (Junín, Lima, Huancavelica).



**Descriptive notes.** 23-24 cm; 99-109 g. Very large cinclodes with long bill and gleaming white underparts unlike any other furnariid. Has blackish loreal area, greyish-brown auriculars, blending to white in malar area; crown greyish, blending to rich brown on back, rump and uppertail-coverts; dark brownish wing-coverts with rich brown edging, blackish remiges with white at base (conspicuous white wingband); rounded tail blackish, narrow whitish tips on three outer pairs of rectrices; underparts pure white; iris dark brown; bill black; tarsus and toes black. Sexes alike. Juvenile undescribed; immature has chestnut auriculars, paler and browner crown. **VOICE.** Song described as a long trill that lasts 7-8 seconds; call a loud "chee" or "chipe" with rocky.

**Habitat.** Bogs with short grass and *Distichia* cushion-plants or adjacent *puna* grassland, with rocky slopes and often glaciers nearby; 4400-5000 m.

**Food and Feeding.** Mainly invertebrates, with "worms" as recorded items; also a small frog taken. Solitary or in pairs. Gleans invertebrates from ground, low vegetation, or water's edge.

**Breeding.** First nest reportedly found in early Nov 2002, made from plant material and feathers, placed among rocks beside new road; two chicks fluttering around foot of nest in mid-Dec, seen together with parents in early Jan 2003, when fed by parents with some insects obtained near nest. No further information available at present.

**Movements.** Presumably resident.

**Status and Conservation.** **VULNERABLE.** Rare and very local, with small geographical range. Recent records from just two sites c. 15 km apart in Cordillera de Huayhuash, on Junín-Lima border; no records since 1978 from other areas where known to occur formerly. Has been recorded in Junín National Reserve. No firm data on population size, trends, or specific threats. In ongoing study, begun in Feb 2000, 29 individuals located in various areas of the central mountain range and in surrounding area of the Huayhuash and Tielio snow-capped mountains, located between provinces of Lima and Junín, with further study planned to take place in Huancavelica in 2003; final results of these surveys and fieldwork should enable an estimate of the species' total population to be made. Although its general habitat is relatively free of anthropogenic disturbance, it apparently has highly specific micro-habitat requirements.

**Bibliography.** Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cory & Hellmayr (1925), Fjeldsá & Krabbe (1990), Harris (1980), Koepeke (1954, 1970), Morrison (1939), Parker *et al.* (1982), Plenge (1979), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wege & Long (1995).







*ssp leucopus*

*ssp assimilis*

37

38

36

*ssp cinnamomeus*

*ssp longirostris*

*ssp albogularis*

39

*ssp rufus*

40

41

*ssp figulus*

*ssp pileatus*

42

43

*ssp melanops*

44

*ssp schoenobaenus*

*ssp bullocki*

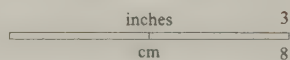
45

*ssp fulva*

*ssp spinicauda*

46

PLATE 14





# Genus *FURNARIUS* Vieillot, 1816

## 36. Pale-legged Hornero

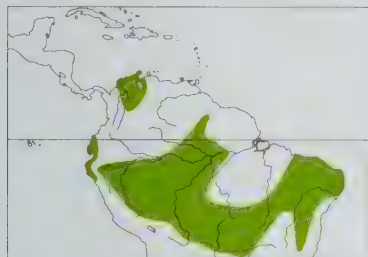
### *Furnarius leucopus*

**French:** Fournier variable **German:** Blaufußtöpfer **Spanish:** Hornero Paticlaro  
**Other common names:** Caribbean Hornero (*endoecus*, *longirostris*); Pacific Hornero (*cinnamomeus*); Tricolour(ed) Hornero (*tricolor*)

**Taxonomy.** *Furnarius leucopus* Swainson, 1838, Guyana. Has been treated as conspecific with *C. torridus*, but the two occur sympatrically in NE Peru. Several races possibly represent separate species, but their songs all sound superficially very similar, and quantitative analysis is needed before determining potential splits. In particular, *cinnamomeus*, with which described form *pallidus* (La Libertad, in Peru) is synonymized, perhaps worthy of full species rank, while *longirostris* (with *endoecus*) may be part of that possible species or itself a distinct species; also, *tricolor* has sometimes been treated as a separate species. Otherwise, race *araguaiae*, described from just a few specimens from few localities, possibly represents only intergradation between *tricolor* and *assimilis*; taxonomic status tentatively maintained pending further analysis. Proposed race *exilis* (N Colombia), purportedly more richly coloured than others in Colombia, considered not diagnosable. Seven subspecies tentatively recognized.

#### Subspecies and Distribution.

*F. l. longirostris* Pelzel, 1856 - N Colombia (Córdoba E to lower Magdalena Valley) and NW Venezuela (NW Zulia E to W Falcón, NW Lara and Carabobo).  
*F. l. endoecus* Cory, 1919 - N Colombia (lower and middle Magdalena Valley) and W Venezuela (S Zulia).  
*F. l. leucopus* Swainson, 1838 - N Brazil (R Negro, R Branco) and SW Guyana.  
*F. l. cinnamomeus* (Lesson, 1844) - W Ecuador (S from W Esmeraldas) and NW Peru (S to N Ancash).  
*F. l. tricolor* Giebel, 1868 - E Peru (Amazonas S to Puno) and W Brazil (E to W Pará, S to N Mato Grosso) S to C Bolivia (Santa Cruz).  
*F. l. araguaiae* Pinto & Camargo, 1952 - SC Brazil (R Araguaia and R das Mortes in E Mato Grosso, possibly also W Goiás).  
*F. l. assimilis* Cabanis & Heine, 1859 - E & S Brazil (Maranhão E to Pernambuco, S to Bahia and S Mato Grosso) and extreme SE Bolivia (SE Santa Cruz).



**Descriptive notes.** 17-18 cm; 39-59 g. Large, richly coloured ovenbird with fairly long and nearly straight bill; strong but mostly concealed dark marks on undertail-coverts. Nominate race has conspicuous whitish supercilium from forehead back to rear nape, brownish-grey auriculars, tawny-rufous malar area; crown rather dark dull rufescent brown, back, rump and uppertail-coverts bright orange-rufous; chestnut wing-coverts, tawny at bend of wing, blackish remiges with conspicuous broad chestnut wingband; short tail broad, slightly rounded, chestnut; throat white, blending to tawny-ochraceous breast,

and to paler flanks and nearly whitish belly; undertail-coverts whitish, with mostly concealed dark brown bases; iris reddish-brown; upper mandible dusky horn at base, paler culmen and towards tip, lower mandible paler; tarsus and toes pinkish. Sexes alike. Juvenile is similar to adult. Race *tricolor* has more ochraceous back, paler than wings and tail, greyer crown; *assimilis* is like last, but has lighter, more ochraceous rump, wings and tail, paler wingband continuing to inner web of outer primary; *araguaiae* is intermediate between previous two, dark-crowned, differing from last in having darker bill, brighter back (brighter than wings and tail), cinnamon patch in remiges smaller; *cinnamomeus* is larger, has pale crown, yellow to whitish iris, longer, more curved bill with mostly dark upper mandible, narrow brownish-grey eyeline contrasting with tawny auriculars, paler underparts, large ochraceous spot on inner web of outer primary; *longirostris* is like last, but more richly coloured below, has paler, greyer crown, narrower wingband, dark iris, lacks trace of ochraceous spot in outer primary; *endoecus* differs from last in darker, less ochraceous upperparts. **Voice.** A series of loud, explosive, piercing, staccato notes, decelerates and descends in pitch, lasts 6-8 seconds, often given in duet; *longirostris* song described as shorter rattle, c. 4 seconds, accelerating and then slowing, on even pitch or falling slightly at end; transliterations of songs of *tricolor* and *cinnamomeus* superficially very similar to others. Call a loud, rich "chet" or "kyeek", or descending "cheep".

**Habitat.** Second-growth scrub, pastures/agricultural land; a variety of semi-open habitats with bare soil: river-edge forest and woodland, gallery forest, second-growth woodland edge, desert river valleys; also fields (pasture, agricultural land), and in towns. Often (but not always) near water. Mainly from near sea-level to 800 m; to 2300 m, locally 2700 m, in Ecuador and NW Peru (*cinnamomeus*).

**Food and Feeding.** Arthropods and other invertebrates; recorded items are termites (Isoptera), ants, Coleoptera (Curculionidae), lepidopteran larvae, and small crabs. Solitary or in pairs. Gleans food items from ground, occasionally flaking leaves; walks on ground.

**Breeding.** Eggs in May and Sept in N Colombia; eggs and nestlings in Nov in E Peru. Presumably monogamous. Nest an "adobe oven" 18-20 cm high, weight 2 kg, made of mud, and placed on tree branch (often, possibly always, over water in Amazonia), nest-chamber lined with plant fibres, mostly leaf petioles; reported also as using old nest of *F. rufus*, *Phacellodomus rufifrons* or *Pseudoseiura lophotes* in E Brazil. Clutch 2 eggs. Abandoned nest of present species frequently taken over by Pacific Parrotlets (*Forpus coelestis*) in NW Peru.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to very common. Occurs in several protected areas, including Tayrona National Park, in Colombia, Rio Palenque Science Centre,

in Ecuador, Tambopata-Candamo Reserved Zone, in Peru, and Pantanal National Park, in Brazil. Benefits from moderate anthropogenic habitat alteration, and has extended its range into deforested areas.

**Bibliography.** Angehr & Aucca (1997), Boesman (1998), Chapman (1926), Cook (1996), Cory & Hellmayr (1925), Dyrce (1987), Ejlsdál & Krabbe (1990), Foster *et al.* (1994), Haffer (1975), Hilty (2003a), Hilty & Brown (1986), Koepcke (1961a, 1972), Naumburg (1930), Parker & Bailey (1991), Parker, Parker & Plenge (1982), Parker, Schulenberg, Graves & Braun (1985), Parker, Schulenberg, Kessler & Wust (1995), Parrini *et al.* (1999), Remsen (2003a), Remsen & Parker (1983), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Robinson (1997), Robinson & Terborgh (1997), Rodner *et al.* (2000), Schubart *et al.* (1965), Schulenberg *et al.* (2001), Sick (1993, 1997), Snyder (1966), Stotz *et al.* (1996), Taczanowski (1884), Terborgh *et al.* (1984), Todd (1948b), Todd & Carriker (1922b), Traylor (1958), Vaurie (1973), Wiedenfeld *et al.* (1985), Willis (1992b), Willis & Oniki (1990), Zimmer (1936a).

## 37. Pale-billed Hornero

### *Furnarius torridus*

**French:** Fournier à bec clair **German:** Brauner Töpfer **Spanish:** Hornero Castaño  
**Other common names:** Bay Hornero

**Taxonomy.** *Furnarius torridus* P. L. Sclater and Salvin, 1866, Rio Ucayali, Peru.

Has been treated as conspecific with *C. leucopus*, or formerly as a dark morph of that species, but the two occur sympatrically in NE Peru. Monotypic.

**Distribution.** Extreme NE Ecuador (Lagartococha), NE Peru and extreme W Brazil, mainly along R Amazon, R Napo and R Ucayali.



**Descriptive notes.** 15-17 cm; 48-57 g. Adult has dull buff supercilium, dark brownish auriculars with some paler shaft streaks, rich brownish loreal and malar areas; crown dull dark brown, upperparts rich dark chestnut; rich dark chestnut wing-coverts and secondaries, dark fuscous primaries, rufous wingband; short tail broad, slightly rounded, deep chestnut; throat white; breast and flanks rich rufescent brown, belly buff to whitish in centre, undertail-coverts cinnamon-buff or pale rufescent brown with mostly or wholly concealed blackish bases; iris brown to reddish-brown; upper mandible whitish to light horn, base blackish, lower

mandible pale pinkish-horn; tarsus and toes pinkish. Differs from similar *F. leucopus* in darker coloration throughout. Sexes alike. Juvenile known from single specimen, resembles adult but has dark flecking on breast. **Voice.** Similar to that of *F. leucopus*, but series of notes is noticeably faster. Call is a loud, harsh "cheek!".

**Habitat.** Flooded tropical evergreen forest, river-edge forest; especially old or middle-aged river islands, from *Cecropia*-dominated woodland to older successional stages; 150-300 m.

**Food and Feeding.** Arthropods and presumably other invertebrates. Solitary or in pairs. Forages while walking. Food items gleaned from ground and shoreline mud.

**Breeding.** No modern information; 19th-century report of stick nest placed in riverbank, and clutch of 4 eggs, requires corroboration.

**Movements.** Probably mainly resident, but ephemeral nature of its river-island habitat must force at least local seasonal movements. Possibly only an occasional visitor or wanderer to NE Ecuador.

**Status and Conservation.** Not globally threatened. Uncommon throughout most of range; recorded regularly at ExplorNapo Lodge, in Peru, where a sizeable area of habitat remains in good condition. Very poorly known species.

**Bibliography.** Cory & Hellmayr (1925), Parker *et al.* (1982), Pinto (1978), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rosenberg, G.H. (1990), Sclater & Salvin (1873), Stotz *et al.* (1996), Vaurie (1973), Zimmer (1936a).

## 38. Lesser Hornero

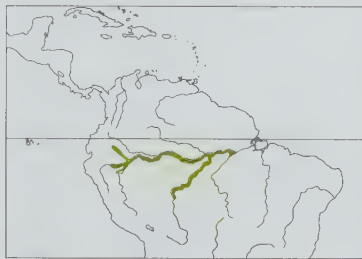
### *Furnarius minor*

**French:** Petit Fournier **German:** Kleiner Töpfer **Spanish:** Hornero Chico

**Taxonomy.** *Furnarius Opetiorhynchus minor* Pelzel, 1858, Rio Madeira, below the mouth of the Rio Mahissy (= Igarapé Maici), Rondônia, Brazil.

A close relationship to *F. leucopus* is suggested by both plumage pattern and geographical distribution. Monotypic.

**Distribution.** R Amazon and lower reaches of major tributaries from SE Colombia, E Ecuador (R Napo) and NE Peru (S to lower R Huallaga) E to NC Brazil (mouth of R Tapajós); extends well up R Madeira, reaching at least mouth of R Ji-Paraná (Rondônia).



**Descriptive notes.** 12-13 cm; 23-29 g. Very small ovenbird with fairly long and nearly straight bill. Adult has conspicuous whitish supercilium from forehead back to rear nape; auriculars and loreal area grizzled greyish-brown, vague darker postocular line; crown dull brownish-grey, back, rump and uppertail-coverts dull rufous; wing-coverts and secondaries mostly rufous, bend of wing whitish, primaries dark fuscous with some rufous showing (rufous wingband); short tail nearly square to slightly rounded, rufous, slightly darker than back; throat white; breast dull tawny-buff, becoming paler on belly and below, lower flanks

slightly brighter, tawny-ochraceous; undertail-coverts with mostly or wholly concealed dark bases; iris dark brown; upper mandible dark brownish-horn, lower mandible pale horn with dark tip of

On following pages: 39. Rufous Hornero (*Furnarius rufus*); 40. Crested Hornero (*Furnarius cristatus*); 41. Wing-banded Hornero (*Furnarius figulus*); 42. Curve-billed Reedhaunter (*Limnornis curvirostris*); 43. Straight-billed Reedhaunter (*Limnornis rectirostris*); 44. Wren-like Rushbird (*Phleocryptes melanops*); 45. Thorn-tailed Rayadito (*Aphrastura spinicauda*); 46. Masafuera Rayadito (*Aphrastura masafuerae*).



varying extent; tarsus and toes grey to horn-coloured. Sexes alike. Juvenile undescribed. Voice. A fast, harsh series of staccato "kee" notes that decelerate and descend in pitch, ending in trill; often in duet. Call described as sharp "krik".

**Habitat.** River-island scrub; early-successional scrub, from *Tessaria*-dominated or *Alchornea*-dominated stage to *Cecropia* woodland, along large white-water rivers, primarily on young river islands; in a study in Peru, understorey of tall *Cecropia* forest and *Tessaria* scrub were the two most heavily used habitats. From 50 m to 200 m.

**Food and Feeding.** Arthropods and probably other invertebrates. Solitary or in pairs. Forages while walking. Food obtained by gleaning from ground, shoreline mud, and low branches, often in or near dense cover.

**Breeding.** Nest a mud oven placed on horizontal branch, nest-chamber lined with grasses and hair. Clutch 4 eggs. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common. Global population very small owing to patchy distribution of habitat and linear geographical range. Suitability of habitat depends on seasonal flooding along major rivers; thus, potentially vulnerable to human alteration of flooding cycle, as well as habitat destruction, which includes seasonal agriculture along rivers.

**Bibliography.** Cohn-Haft (2003a), Cory & Hellmayr (1925), Hilty & Brown (1986), Parker *et al.* (1982), Pearman (1993b), Pinto (1978), Remsen (2003a), Remsen & Parker (1983), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rosenberg, G.I. (1990), Selater & Salvin (1873), Sick (1993, 1997), Stotz *et al.* (1996), Tallman & Tallman (1977).

## 39. Rufous Hornero

### *Furnarius rufus*

**French:** Fournier roux **German:** Rosttöpfer **Spanish:** Hornero Común  
**Other common names:** Red Hornero/Ovenbird

**Taxonomy.** *Merops rufus* J. F. Gmelin, 1788, Buenos Aires, Argentina.

Plumage pattern and biogeography suggest that most likely sister-species is *F. cristatus*. Race *albugularis* previously known as *hadius*, but that taxon was described within genus *Turdus*, in which the name was preoccupied. Significant variation in body size follows Bergmann's Rule, with largest birds farthest from equator. Relative distributions in Argentina of *paraguayae* and *commerstoni* require further study. Proposed race *schuhmacheri* (S Bolivia) does not appear to be diagnosable; description believed to have been based on worn specimens. Four subspecies recognized.

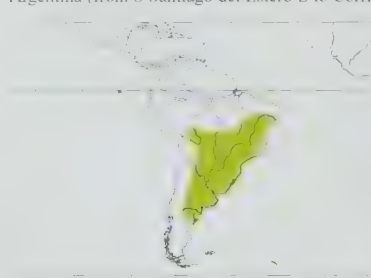
#### Subspecies and Distribution.

*F. r. commerstoni* Pelzeln, 1868 - C & E Bolivia (La Paz and Beni S to Tarija and Santa Cruz), SW Brazil (Mato Grosso) and NW Argentina (N Salta, SE Jujuy).

*F. r. paraguayae* Cherrie & Reichenberger, 1921 - Paraguay and N Argentina (Formosa S to La Rioja, N Santiago del Estero and N Santa Fe).

*F. r. albugularis* (Spix, 1824) - E & SE Brazil (S Ceará, Alagoas, Bahia, and Goiás S to São Paulo and Rio de Janeiro).

*F. r. rufus* (J. F. Gmelin, 1788) - SE Brazil (Paraná S to Rio Grande do Sul), Uruguay and C & E Argentina (from S Santiago del Estero E to Corrientes, S to Neuquén and N Rio Negro).



**Descriptive notes.** 16-23 cm; 31-65 g. Large ovenbird with medium-length, nearly straight bill. Has poorly defined light rufous supercilium, loreal area and malar area, slightly darker auriculars; forehead rufous-brown, blending into dull brown crown; more rufescent hindneck; back and rump rufescent brown with some paler edgings, uppertail-coverts rufous; wing-coverts and secondaries rufescent brown, bend of wing pale buff, primaries dull brownish with light rufous wingband; short tail slightly rounded to nearly square, mostly dark rufous; throat whitish, blending to pale vinaceous tawny on breast.

to paler buff belly; flanks darker, more tawny, undertail-coverts buffy whitish with concealed dull brownish bases; iris rufous-brown to cinnamon; upper mandible fuscous to greyish or dark brownish-horn, lower mandible pale horn to pinkish with dark tip; tarsus and toes greyish, brownish or blackish. Sexes alike. Juvenile is paler below. Race *albugularis* is smaller, with darker, greyer crown, more conspicuous broader reddish collar, much more ochraceous below; *commerstoni* is like previous but collar even broader, back redder, belly paler, less ochraceous; *paraguayae* differs from last in more rufescent forehead and nape, has less greyish underparts. Voice. Song a long, rhythmic, raucous burst of loud, sharp "kweep!" notes, trails off towards end but often with some slower, emphatic, complaining terminal notes; often in duet. Calls include sharp "jeet!", "jeah" or "krip", often in series.

**Habitat.** Second-growth scrub, pastures and agricultural land; a variety of open habitats, particularly disturbed areas with bare soil; second-growth scrub, pasture and agricultural land, also urban parks and gardens. Especially common near human habitations. Mostly in lowlands; ranges into mountains in some dry or agricultural valleys, to 3500 m.

**Food and Feeding.** Arthropods and other invertebrates; also some seeds. Reported dietary items are Coleoptera (of families Curculionidae, Chrysomelidae, Elateridae, Carabidae, Cassidae, Tenebrionidae, Aphodiidae, Histeridae, Scarabaeidae), ants (e.g. *Pheidole*, *Crematogaster*, *Acromyrmex*), termites (Isoptera), lepidopteran larvae, grasshoppers (Acrididae), Hemiptera, worms (Annelida), spiders, and snails (*Planorbis*); ants seem particularly well represented in stomach samples. Nestlings fed with crickets (Gryllidae), mole-crickets (*Scapteriscus*), coleopteran and lepidopteran larvae, Annelida, spiders. Solitary or in pairs; occasionally, or perhaps locally, associates with foraging groups of Chalk-browed Mockingbirds (*Mimus saturninus*). Forages while walking. Gleans invertebrates and some seeds from bare ground and leaf litter, very rarely from trunks and branches.

**Breeding.** Season largely during austral spring-summer; eggs in Sept-Dec and nestlings in Oct to mid-Jan in Argentina; nestlings in Oct-Jan in S Brazil; frequently double-brooded. Monogamous; paired throughout year, often lifelong pair-bond. Nest a large globular "adobe oven" 20-30 cm in diameter, 20-25 cm tall, walls typically 3-5 cm thick, made of clay, mud, some dung, and straw, weight c. 3-5 kg, orientation of entrance variable, usually facing away from prevailing wind (in some studies), occasionally two openings or with entrance at top, interior wall separating narrower vestibule from larger nest-chamber, floor of latter with bits of grasses and stems; placed up to 8 m above ground in open location on tree branch, fence post, telephone

pole, rooftop or almost any structure, occasionally on bare ground, rock, or on top of as many as three older nests, or even in or on skull of dead mammal or large tin can; building activity occurs throughout year, entire nest typically completed within 2-3 months but can be built in 15 days, sometimes more than one nest built but only one used; territory probably defended all year, size 0.25-1 ha. Clutch 2-4 eggs, rarely 5 (mean 3-5 in C Argentina), laid at 1-day intervals; incubation by both sexes, period 14-18 days; both also brood and feed chicks, nestling period c. 23-26 days; juveniles remain in parental territory for 4-9 months, occasionally attempt to help with nest-building but attacked by parents when they do. Regularly parasitized by Shiny Cowbird (*Molothrus bonariensis*), eggs of which sometimes ejected. High nesting success with 2-5 young fledged per clutch in one detailed study, but only 1-3 per clutch in another study; main factor causing reduced success was starvation of nestlings, probably affecting especially the last-hatched in broods of 4; in another study abnormally high temperatures were apparently major cause of mortality. Annual adult survival rate 71%.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Common to abundant throughout range in suitable habitats, i.e. human-disturbed areas. Benefits from moderate anthropogenic habitat alteration; has expanded its distribution during 20th century, primarily as a result of deforestation. Old nests of this furnariid are used extensively by other bird species, both for nesting and as roost-sites.

**Bibliography.** Basterreix (1923a, 1923b), Belton (1984), Burger (1976, 1979), Burghi (1937), Canevari *et al.* (1991), Contreras (1979e), Cordero (1931), Cory & Hellmayr (1925), Cuello (1985), Daguerre (1921), Davis (1993), Doello-Jurado (1919), Drabble (1953), Esteban (1951b), Fiora (1933), Fjeldså & Krabbe (1990), Fjeldså & Møller (1996), Fraga (1979, 1980), Fraga & Narosky (1985), Friedmann (1927), Gavio (1938), Gazari (1967), Harper (1932), Hayes (1995), Hermann & Meise (1966), Kay (1941), Kirwan & Mazar Barnett (2001), Kratter *et al.* (1993), MacDonald (1953), Madroño, Robbins & Zyskowski (1997), Mason (1985), Melo-Júnior *et al.* (2001), Narosky *et al.* (1983), Navas & Bó (1987), Nores & Yzurieta (1982), Parker & Goerck (1997), Parker, Gentry *et al.* (1993), Parrini *et al.* (1999), Partridge (1953), de la Peña (1987, 1988), Pereyra (1939, 1940), Peris (1990), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Ríos-Paredi (1973), Salvador (1988), Schubart *et al.* (1965), Serié (1919), Short (1975), Sick (1993, 1997), Smyth (1928), Stotz *et al.* (1996), Tálce & Mosera (1964), Teixeira *et al.* (1987), Tremoleras (1929), Vaz-Ferreira & Palerm (1973), Vaz-Ferreira, Palerm *et al.* (1993), Vaz-Ferreira, Stagi & Bianco (1992), Vaz-Ferreira, Stagi, Loinaz & Bianco (1998), Webster (1941), Wetmore (1926), Willis (1992b), Willis & Oniki (1990), Zotta (1936, 1940).

## 40. Crested Hornero

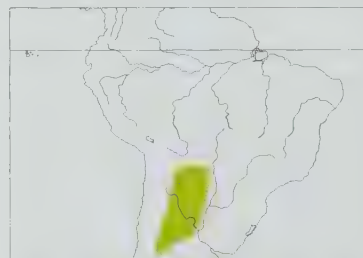
### *Furnarius cristatus*

**French:** Fournier huppé **German:** Haubentöpfer **Spanish:** Hornero Copetón

**Taxonomy.** *Furnarius cristatus* Burmeister, 1888, Sierra de Córdoba, Argentina.

Plumage pattern and biogeography suggest that the most likely sister-species is *F. rufus*. Monotypic.

**Distribution.** Extreme SE Bolivia (SE Chuquisaca, E Tarija) and W Paraguay S to C Argentina (S to S San Luis, N Córdoba, C Santa Fe, NW Entre Ríos).



**Descriptive notes.** 14-15 cm; 26-29 g. Small ovenbird with distinctive crest, bill shorter than that of congeners. Adult has inconspicuous pale supercilium, whitish loreal area, and dull brownish malar area and auriculars vaguely outlined with darker brown; forehead rufescent, contrasting with duller clay-brown crown with feathers elongated into crest; back and rump dull tawny-rufous, uppertail-coverts rufous; wing-coverts and remiges mostly dull tawny-brown, remiges with rufous edges, bend of wing whitish; tail slightly rounded to nearly square, central rectrices dull rufous, rest brighter rufous; throat whitish, blending to dull

tawny breast; belly and flanks more tawny, centre of belly nearly whitish, undertail-coverts tawny whitish with mostly or wholly concealed rufescent-brown bases; iris brownish-red; upper mandible blackish, lower mandible flesh-coloured, with darker tip; tarsus and toes grey. Sexes alike. Juvenile undescribed. Voice. Song an explosive staccato burst of loud, piercing whistled notes tailing off towards end, c. 4-5 seconds long, shriller than song of *F. rufus*; often in duet. Call "jwee-t-t-t-t-t-t-t-t".

**Habitat.** Arid lowland scrub; Chaco scrub and arid woodland, particularly around houses and clearings; to 1000 m.

**Food and Feeding.** Arthropods. Solitary or in pairs. Gleans items from ground.

**Breeding.** Breeds during austral spring and summer; eggs in Nov in Argentina. Presumably monogamous. Nest a hardened "adobe oven" c. 20 cm in diameter and c. 15 cm tall, similar to that of *F. rufus* but smaller, floor of nest-chamber with bits of grass, placed c. 2-5 m up on branch of bush or tree. Clutch 4 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout range. Occurs in Chancani Natural Reserve, in Argentina. Benefits from modest anthropogenic habitat modification.

**Bibliography.** Anon. (2003d), Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Esteban (1951b), Friedmann (1927), Hayes (1995), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Nellar (1993), Nores *et al.* (1983), Ochoa (1971), Olrog (1963a), de la Peña (1987, 1988, 1997), Remsen & Ridgely (1980), Remsen & Traylor (1983, 1989), Ridgely & Tudor (1994), Salvador (1990), Short (1975), Smyth (1928), Stotz *et al.* (1996).

## 41. Wing-banded Hornero

### *Furnarius figulus*

**French:** Fournier bridé **German:** Schwarzspitzentöpfer **Spanish:** Hornero Colibandeado  
**Other common names:** Band-tailed/Tail-banded/White-banded Hornero; Pileated Hornero (*pileatus*)

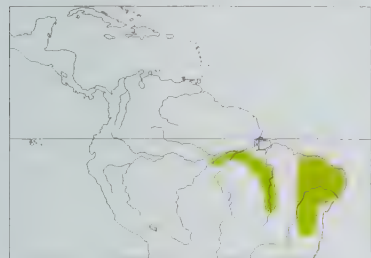
**Taxonomy.** *Turdus figulus* M. H. K. Lichtenstein, 1823, Bahia, Brazil.

The most aberrant member of the genus with respect to nest type and some plumage features. Distinctive race *pileatus* considered possibly a separate species by some authors. Two subspecies recognized.



**Subspecies and Distribution.**

*F. f. pileatus* P. L. Selater & Salvin, 1878 - EC Brazil from E Amazonas E to C Pará and NW Goiás (upper R Araguaia).  
*F. f. figulus* (M. H. K. Lichtenstein, 1823) - E Brazil (E from E Maranhão, S Bahia and N & E Minas Gerais).



**Descriptive notes.** 15-16 cm; 28 g. Small hornoro with fairly long, nearly straight bill. Nominate race has conspicuous whitish supercilium extending to nape side, dingy rufous loreal area, dark eyestripe, dull rufous auriculars, tawny-buff malar region; crown chestnut-rufous, back, rump and uppertail-coverts slightly paler; wing-coverts and secondaries rufous, bend of wing whitish, primaries fuscous with dark rufous wingband; tail nearly square, same colour as back, rectrices tipped brownish-black, mainly on inner webs; throat whitish, blending to dull pale tawny-brown below, centre of belly whitish, undertail-coverts almost white; iris brown; bill brownish; tarsus and toes brownish. Sexes alike. Juvenile undescribed. Race *pileatus* has much darker brown crown and auriculars, whiter supercilium, deeper rufous back, larger and more numerous tail spots. **Voice.** Song a series of 6-10 staccato "chik" notes, decelerating and descending in pitch; often duets. Calls include "chibit, chcp" and loud "kwee-eh".

**Habitat.** River-edge woodland and second-growth scrub, including in disturbed open areas, gardens, pastures and marsh edge; usually near water, especially rivers. From near sea-level to 600 m, locally to 900 m; recorded at 1250 m in Minas Gerais.

**Food and Feeding.** Invertebrates; one stomach contained 16 Coleoptera, 2 Hemiptera, and a snail (Hydrobiidae). Forages singly or in pairs. Walks on ground, where turns over leaves and branches; invertebrates gleaned from ground or mud.

**Breeding.** Eggs in Apr; fledglings in Mar. Presumably monogamous. Nest a shallow open cup made from grass and plant fibres, lined with feathers and hair, hidden in "cavity" in bases of palm leaves (e.g. *Orbignya*) or in bromeliads, occasionally in crevice in building; reports of this species making "oven" nests possibly erroneous. Clutch 2 eggs; incubation period reported as 20 days.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Global population probably very small owing to patchy distribution of habitat and linear geographical range. Occurs in Rio Doce and Pedra Talhada State Parks. Range has expanded during the last century.

**Bibliography.** Anon. (2003e), Cohn-Haft (2003a), Cory & Hellmayr (1925), Ferreira de Vasconcelos & Melo-Júnior (2001), Graves & Zusi (1990), Kirwan *et al.* (2001), Melo-Júnior *et al.* (2001), Parker & Goerck (1997), Parrini *et al.* (1999), Pinto (1978), Remsen & Parker (1983), Ridgely & Tudor (1994), Schubert *et al.* (1965), Sick (1993, 1997), Sneath (1935), Stotz *et al.* (1996), Studer & Viellard (1990), Willis (1992b), Zyskowski & Prum (1999).

## Genus *LIMNORNIS* Gould, 1839

### 42. Curve-billed Reedhaunter

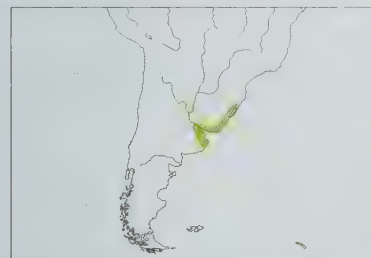
*Limnornis curvirostris*

**French:** Synallaxe à bec courbe **Spanish:** Pajonalera Piquicurve  
**German:** Braunrücken-Riedschlüpfer  
**Other common names:** Curve-billed Reedrunner

**Taxonomy.** *Limnornis curvirostris* Gould, 1839, Maldonado, Uruguay.

No obvious close relatives; *Limnornis curvirostris* placed in present genus by some authors, whereas others do not consider the two to be closely related. Differs strongly from that species in tail structure, nest materials used, and greenish-blue egg colour (unusual within family). Monotypic.

**Distribution.** Extreme SE Brazil (coastal Rio Grande do Sul), S Uruguay and extreme E Argentina (Entre Ríos, E Buenos Aires).



**Descriptive notes.** 15-17 cm; 27-30 g. Rather plainly coloured, long-billed furnariid; remarkably similar to some Old World sylviid warblers of genus *Acrocephalus*. Has conspicuous whitish supercilium, poorly defined dark brown postocular line blending to brighter auriculars with some whitish shaft streaks; crown to uppertail-coverts rich brown, darkest on forehead, brightest and most rufescent on tail-coverts; wings and graduated tail rufescent brown; throat and malar area whitish, blending to slightly darker, more buffy breast, pale creamy buff below, richer buff on undertail-coverts and more cinnamon on

flanks; iris brown; upper mandible brown to blackish, lower mandible whitish mixed brownish; tarsus and toes greyish. Differs from *Limnornis rectirostris* in heavier build, shorter and clearly decurved bill, brown crown and upperparts. Sexes alike. Juvenile undescribed. **Voice.** A fast series of harsh notes that ascend and then descend in pitch, fading towards end; call a hollow "took".

**Habitat.** Freshwater marshes; extensive reedbeds in freshwater marshes and coastal lagoons, locally brackish; predominant vegetation often *Scirpus giganteus* and *Zizaniopsis bonariensis*. Sea-level to 100 m.

**Food and Feeding.** Arthropods; recorded items are ants, grasshoppers (Acrididae), and Coleoptera (including Chrysomelidae) and their larvae. Usually solitary. Gleans food items from marsh vegetation.

**Breeding.** Season presumably during austral spring-summer. Presumably monogamous. Nest a globular ball c. 22 cm in diameter, made from woven grasses, leaves and fibres, interior with bed of

soft plant material, side entrance protected by slight "awning", variously reported as attached to reeds or as supported by vegetation below. Clutch 2 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Apparently uncommon; status poorly known. Occurs in Aparados da Serra National Park, in Brazil, and Costanera Sur, Ingeniero Otamendi, and Ribera Norte Reserves, in Argentina. Narrow habitat requirements appear to render it potentially vulnerable.

**Bibliography.** Belton (1984), Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Cuello (1985), Klimaitis & Moschione (1987), López *et al.* (1999), Mason (1985), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olrog (1963a), de la Peña (1988, 1997), Pinto (1978), Ricci & Ricci (1984), Ridgely & Tudor (1994), Sick (1993, 1997), Stotz *et al.* (1996), Willis (1992b), Zotta (1932, 1936), Zyskowski & Prum (1999).

## Genus *LIMNOCTITES* Hellmayr, 1925

### 43. Straight-billed Reedhaunter

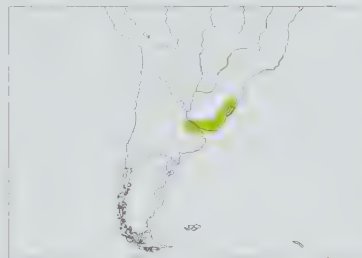
*Limnornis rectirostris*

**French:** Synallaxe à bec droit **Spanish:** Pajonalera Piquirrecta  
**German:** Grauscheitel-Riedschlüpfer  
**Other common names:** Straight-billed Reedrunner

**Taxonomy.** *Limnornis rectirostris* Gould, 1839, Maldonado, Uruguay.

No obvious close relatives; placed by some authors in genus *Limnornis*, whereas others do not consider the two genera closely related. Differs strongly from that taxon in tail structure, nest materials used, and white egg colour. Monotypic.

**Distribution.** Extreme SE Brazil (Rio Grande do Sul), Uruguay and extreme E Argentina (Entre Ríos, N Buenos Aires).



**Descriptive notes.** 16-17 cm; 16-21 g. Has whitish supercilium, greyish face; dark grey crown, brownish-grey back and rump, rufous wings and tail; tail graduated, protruding bare shafts; throat whitish, breast and belly slightly duller, flanks and undertail-coverts tinged buff; iris light brown to orange-red; upper mandible dark horn to blackish, lower mandible pinkish-grey, whitish or yellowish-orange with dark tip; tarsus and toes dark greyish to yellowish-olive. Differs from rather similar *Limnornis curvirostris* in less heavy build, longer and barely decurved bill, grey crown and back. Sexes alike. Juvenile is more rufescent above,

more ochraceous below. **Voice.** High-pitched broken trill of "pee" or "ti" notes, all on same pitch, accelerating at end, variably 2-4 seconds long; call "chek" or "tzig".

**Habitat.** Freshwater marshes and other wet areas dominated by the spiny apiaceous herb "caraguatá" (*Eryngium*), and shrubs and short trees bordering these wet areas; locally also away from water in upland thickets of *Eryngium pandanifolium*. Up to 1100 m.

**Food and Feeding.** Arthropods; Coleoptera, Hemiptera and Hymenoptera recorded as taken. Usually solitary. Gleans food items from marsh vegetation.

**Breeding.** Season presumably during austral spring-summer; eggs in Nov and nestlings in Jan. Monogamous. Nest an oval-shaped ball c. 20 cm tall and 15 cm wide, made from leaves (especially of *Eryngium horridum* and *Scirpus*) and twigs, side entrance protected by slight "awning", placed c. 0.3-1 m above ground and supported below by marsh vegetation. Clutch 2-3 eggs; both sexes incubate.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Fairly common but very local. Fairly common in Aparados da Serra National Park, in Brazil; Ingeniero Otamendi Reserve, in Argentina, is a stronghold. Narrow habitat requirements render this species potentially vulnerable. Drainage of marshland a possible threat throughout range, and in areas with large human populations, such as province of Buenos Aires in Argentina, small wetlands are at risk from the dumping of large quantities of refuse, as well as water pollution. Extensive plantations of willows (*Salix*), eucalyptus (*Eucalyptus*) and pines (*Pinus*) also consume huge amounts of underground water, resulting in the drying-out of wetlands; this thought to be a major problem in E parts of Entre Ríos, in Argentina.

**Bibliography.** Babarskas & Fraga (1998), Belton (1984), Canevari *et al.* (1991), Carriquiry (1998), Chebez (1994), Chebez *et al.* (1999), Cory & Hellmayr (1925), Cuello (1985), Daguerre (1933), Escalante (1956), Fraga & Narosky (1985), Gerzenstein & Achaval (1967), López *et al.* (1999), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olrog (1963a), Parker & Goerck (1997), de la Peña (1988, 1997), Pereyra (1938), Pinto (1978), Ricci & Ricci (1984), Ridgely & Tudor (1994), Sick (1993, 1997), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Willis (1992b), Zorrilla (1963), Zyskowski & Prum (1999).

## Genus *PHLEOCRYPTES*

Cabanis & Heine, 1859

### 44. Wren-like Rushbird

*Phleocryptes melanops*

**French:** Synallaxe troglodyte **German:** Binsenschlüpfer **Spanish:** Junquero  
**Other common names:** Rushbird, Black-faced Spinetail



**Taxonomy.** *Sylvia melanops* Vieillot, 1817, Paraguay.

Affinities uncertain. Possible relationship to *Aphrastura* suggested by plumage features, but nest architecture considered by some to be more like that of similarly marsh-nesting *Limnoctites* and *Limnornis*; blue-green egg colour (unusual within family) more like latter's. Proposed race *juninensis* (from vicinity of L. Junin, in C. Peru), purportedly with brighter plumage, evidently not diagnosable. Four subspecies recognized.

**Subspecies and Distribution.**

*P. m. brunescens* J. T. Zimmer, 1935 - coastal W Peru (La Libertad S to Ica).

*P. m. schoenobaenus* Cabanis & Heine, 1859 - C & S Peru (L. Junin area in Andes of Junin, Altiplano region of Puno), W Bolivia (La Paz S to Oruro) and NW Argentina (Jujuy).

*P. m. loensis* R. A. Philippi [Baños] & Goodall, 1946 - coastal S Peru (Arequipa) and N Chile (Tarapacá).

*P. m. melanops* (Vieillot, 1817) - lowlands of SE Brazil (São Paulo S to Rio Grande do Sul), Argentina (Tucumán E to Misiones, S to Chubut) and Chile (Atacama S to Aisén), but N limits of breeding unclear; also to W Paraguay in non-breeding season.

**Descriptive notes.** 13-14 cm; 11-16 g. Small furnariid, remarkably similar in plumage to Marsh Wren (*Cistothorus palustris*). Male nominate race has prominent buff supercilium extending to hindcrown, loreal area grizzled with greyish, dark brown postocular band, auriculars mottled dark brown, rear of malar area buff; blackish crown with broad, blurry brown streaks and faint pale feather shafts, poorly defined buff-brown collar less streaked, blackish back with rich brown streaks and prominent whitish feather shafts; rich brown rump and uppertail-coverts, latter mixed with blackish; blackish wings, coverts with broad

chestnut tips forming wingbars, remiges with chestnut and rufous edgings (conspicuous broad chestnut wingband); tail graduated, central rectrices rich brown, rest blackish-brown with buffy to tawny tips and (on outer webs of outer rectrices) edges, inner two feather pairs with c. 4 mm of distal shafts bare; throat white, blending to buffy whitish on breast and belly, contrasting with dull brown sides and flanks; undertail-coverts mixed tawny-buff and white; iris brown to dark brown; bill blackish to dark horn, sometimes pale pinkish or greyish base of lower mandible; tarsus and toes greyish-horn. Female is slightly paler than male. Juvenile has crown feathers with rufous shafts, feathers of underparts with narrow dark edges. Race *schoenobaenus* is significantly larger and longer-billed, brighter above and whiter below than nominate; *brunescens* has paler, more heavily streaked crown, browner (less blackish) back, paler wingband, much paler and duller underparts; *loensis* is like previous, but wingband darker, more chestnut, and rump, sides and flanks darker. **VOICE.** A repeated mechanical ticking, repeated several times per second, sometimes for several minutes, often ending with trill like that of cicada (Cicadidae); Andean populations described as similar but with more strident tones. Calls include buzzy "zzt", nasal "ik" or "eh", and various squeaky notes.

**Habitat.** Freshwater marshes; fresh or brackish marshes and lake edges with aquatic vegetation, especially *Scirpus* rushes; sea-level to 4300 m.

**Food and Feeding.** Arthropods. Usually solitary. Gleans items from emergent or floating aquatic vegetation, also occasionally from water and adjacent mud.

**Breeding.** Breeds during austral spring-summer; eggs in Sept and Jan in Peru, Oct and Feb in S Brazil and Sept-Jan in Argentina; nestlings in Sept in Peruvian Andes and Oct-Feb in Argentina. Presumably monogamous. Nest a globular mass c. 12-18 cm tall and 9-12 cm broad, of woven water-soaked grasses and fibres cemented together with mud, which dries to form hard outer shell, lined with feathers and hairs, side entrance near top usually protected by slight "awning", attached with grass blades and cemented with mud to 3-7 reeds or *Solanum malacoxylon* stems 0.4-0.9 m (usually c. 0.8 m) above water. Clutch 2-4 eggs; incubation 16 days.

**Movements.** Mainly resident; some N migration by S populations during austral winter, but uncertain whether any parts of S range then abandoned.

**Status and Conservation.** Not globally threatened. Generally common in appropriate habitat. Dependence on wetlands with emergent vegetation renders it somewhat vulnerable; many local populations greatly reduced or extirpated by habitat destruction. Andean and coastal Pacific races particularly vulnerable.

**Bibliography.** Araya & Chester (1993), Belton (1984), Bond (1945), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Chesser (1994), Cory & Hellmayr (1925), Cuello (1985), Fjeldså & Krabbe (1990), Grigera *et al.* (1996), Hayes (1995), Johnson (1967), Koepeke (1954, 1970), MacDonald (1933), Mason (1985), Mazar Barnett (1999), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas & Bö (1987), Olrog (1948, 1963a), Parker *et al.* (1982), de la Peña (1987, 1988, 1996), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ribero (1991), Ridgely & Tudor (1994), San Martín (1927), Selater & Hudson (1888), Short (1975), Sick (1993, 1997), Smyth (1928), Stotz *et al.* (1996), Taczanowski (1884), Wetmore (1926), Willis (1992b), Zimmer (1935b, 1936a), Zotta (1938), Zyskowski & Prum (1999).

## Genus *APHRASTURA* Oberholser, 1899

### 45. Thorn-tailed Rayadito

#### *Aphrastura spinicauda*

**French:** Synallaxe rayadito

**Spanish:** Rayadito Común

**German:** Festland-Stachelschwanzschlüpfer

**Other common names:** Thorn-tailed Creeper

**Taxonomy.** *Motacilla spinicauda* J. F. Gmelin, 1789, Tierra del Fuego.

Affinities of genus uncertain; plumage features suggest possible relationship to *Phleocryptes* and to sympatric *Pygarrhichas*. Close to, and perhaps ancestor of, *A. masafueræ*. Validity of race *bullocki*, described from only two specimens, perhaps requires reconfirmation; also, individuals with ochraceous underparts, thus resembling *fulva*, evidently occur throughout near-shore Chilean islands, suggesting that this ventral pattern may appear independently in insular populations as response to more humid conditions (Gloger's Rule); in addition, population on Diego Ramírez I apparently differs morphologically from typical nominate form; further study

needed in order to clarify geographical limits and validity of races. Three subspecies currently recognized.

**Subspecies and Distribution.**

*A. s. spinicauda* (J. F. Gmelin, 1789) - C & S Chile (S from S Coquimbo) and extreme W Argentina (S from Neuquén) S to Tierra del Fuego, Staten I and Diego Ramírez I; also Falkland Is.

*A. s. bullocki* Chapman, 1934 - Mocha I, off SC Chile.

*A. s. fulva* Angelini, 1905 - Chiloe I, off SC Chile.



**Descriptive notes.** 13-14 cm; 10-13 g. Small, active, acrobatic furnariid. Nominative race has blackish-brown crown, contrasting broad ochraceous supercilium from forehead (where duller) and extending posteriorly to upper back, broad blackish line from lores back to shoulder area; blackish-brown colour of crown extends onto upper back, which otherwise brown; rump brown, uppertail-coverts chestnut; wing-coverts blackish, medians tipped and edged rufous, greater tips whitish; folded wing looks mainly black or blackish; remiges with orange-rufous at bases, buffy brown band across secondaries and tertiaries; tail strongly graduated, distal portions of shafts virtually without barbs and producing very "spiny" appearance, spines c. 20 mm long on central rectrices (also with stiffened shafts), progressively reduced on lateral feathers, only 5 mm long on outer pair, colour pattern distinctive and complex, a mix of blackish, brown, chestnut and rufous; throat white, blending to dull buffy breast and belly, with broad pale brownish sides, rufescent flanks and undertail-coverts; iris dark brown; bill blackish; tarsus and toes greyish. Differs from *A. masafueræ* in smaller size, shorter bill, brighter and more patterned plumage. Sexes alike. Juvenile undescribed. Race *bullocki* is very like nominate, has whitish throat but brownish-buff tinge below; *fulva* has entirely ochraceous underparts, palest on throat. **VOICE.** Song a thin dry trill, variable in duration; calls include high-pitched "zee-zee" or "tzt-tzt", sharp "tic" and metallic "ti ti".

**Habitat.** Southern temperate forest, locally arid lowland scrub; tall humid forest (usually *Nothofagus*) and adjacent second growth; also tussock grass (*Poa flabellata*) or shrubs (e.g. *Berberis*) on islands with little or no arborescent vegetation. Mainly sea-level to 1200 m, locally to 2000 m.

**Food and Feeding.** Arthropods; Diptera and Hymenoptera recorded as taken. Also seen to peck ripe fruits of *Berberis*, *Ribes* and *Gunnera*. Forages in pairs, also in single-species flocks of 4-7 and, occasionally, up to 15 individuals. Often in mixed-species flocks, in which it is the nuclear species. Gleans items from foliage, mosses and lichens, also from branches and trunks, mainly from understorey to canopy; occasionally from ground. Often described as ecologically similar to tits (Paridae) or, sometimes, treecreepers (Certhiidae) of N Hemisphere.

**Breeding.** Season during austral spring-summer; eggs in Nov-Dec and nestlings in Oct-Jan. Presumably monogamous. Nest placed behind loose bark or in hole or crevice in tree, or crack in tree stump, lined with twigs, grass and feathers. Clutch 3-4 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Common to locally abundant in most of range. Occurs in Vicente Pérez Rosales, Nahuelbuta and Cerro La Campana National Parks, in Chile, and Tierra del Fuego National Park, in Argentina. Region inhabited generally has only sparse human population.

**Bibliography.** Araya & Chester (1993), Blondel *et al.* (1984), Canevari *et al.* (1991), Chebez & Bertonatti (1994), Chebez *et al.* (1999), Contreras (1975), Cory & Hellmayr (1925), Crawshaw (1907), Fjeldså & Krabbe (1990), Grigera *et al.* (1996), Humphrey *et al.* (1970), Johnson, A.W. (1967, 1972), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olrog (1963a), de la Peña (1987, 1988), Pereyra (1951), Philippi *et al.* (1954), Reynolds (1934, 1935), Ridgely & Tudor (1994), Stotz *et al.* (1996), Trimble (1943), Vuilleumier (1967, 1972, 1985, 1991), Wallace (1991).

### 46. Masafuera Rayadito

#### *Aphrastura masafueræ*

**French:** Synallaxe de Masafuera

**Spanish:** Rayadito de Más Afuera

**German:** Insel-Stachelschwanzschlüpfer

**Other common names:** Masafuera Creeper

**Taxonomy.** *Synallaxis Masafueræ* [sic] R. A. Philippi [Krumwiede] and Landbeck, 1866, Alejandro Selkirk I (formerly Más Afuera), Chile.

Affinities of genus uncertain; plumage features suggest possible relationship to *Phleocryptes* and *Pygarrhichas*. Close to *A. spinicauda*, having diverged from that or from common ancestor. Monotypic.

**Distribution.** Alejandro Selkirk I (formerly Más Afuera), in Juan Fernández Is (off Chile).



**Descriptive notes.** 14-15 cm. Has whitish forehead with some narrow rufous streaks, dark dusky brown crown, dull buff-brown supercilium poorly defined; back dull brown, rump rufous-brown; wing-coverts mostly blackish, tips tawny (whiter when plumage worn), remiges blackish with dull rufous at bases; tail graduated, shafts stiff, barbs reduced distally and giving "spiny" appearance, webs rufous, blackish bases on all but central pair; throat whitish, breast and belly dull buffy grey-brown, tinged rufescent, flanks and undertail-coverts rufescent; iris brown; upper mandible horn-brown or mostly horn-tinged yellowish-white (source of variation unknown); lower mandible yellowish-horn; tarsus and toes horn-grey. Differs from *A. spinicauda* in slightly larger size, longer bill, duller plumage. Sexes similar, possibly differ in colours of upper mandible and crown. Juvenile undescribed. **VOICE.** Call a low churring "trrrrr" c. 1-2 seconds long, singly or repeated.

**Habitat.** Semi-humid/humid montane scrub; wooded areas dominated by the tree-fern *Dicksonia externa*, with ground mostly covered by the fern *Lophosoria quadripinnata*, often along streams. At 800-1300 m; occasionally down to 600 m or lower in austral winter.

**Food and Feeding.** Diet little known; probably consists mostly of arthropods. Almost always occurs in pairs. Forages in understorey, and also occasionally on ground in leaf litter. Acrobati-



cally gleans items from fern foliage and fronds, hanging upside-down like tits (Paridae); also seeks food on mosses and lichens that grow on the tree *Drimys confertifolia* (Winteraceae). Moves through ferns slowly, by hops and short flights; also runs up trunks in manner of treecreepers (Certhiidae).

**Breeding.** Season at least from early Dec to late Jan. Nest situated in natural cavity in steep rock face, usually more than 5 m above surrounding ground; entrance hole extremely small, c. 3 cm in diameter. Both adults feed chicks in equal proportions; nestlings fed on average 36 times per hour, 15 hours per day.

**Movements.** Resident; some downslope movement in winter.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Juan Fernández Islands EBA. Total population thought to number 500-1000 birds in mid-1980s; more recent estimates, based on transect counts, give much lower figure, only c. 140 individuals in 2002. As the

entire Juan Fernández archipelago is a biosphere reserve, there are no foreseeable threats from development. The habitat on Alejandro Selkirk is, however, threatened by the trampling and grazing of introduced goats (*Capra*), and the rayadito is not present where habitat degradation is severe; introduced predators, including rats (*Rattus*) and cats, are presumably also a major threat; fires lit by humans are an additional problem, leading to further loss of habitat. Indigenous race *exsul* of Red-backed Hawk (*Buteo polyosoma*) preys frequently on both adults and nestlings. Conservation status almost certainly merits reassessment; it should probably be reclassified as Endangered, or perhaps even Critical.

**Bibliography.** Araya & Chester (1993), Brooke (1987, 1988), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cory & Hellmayr (1925), Hahn (2002), Hahn & Mattes (2000), Hahn & Römer (1996, 2002), Hulm (1995), Johnson (1967), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vuilleumier (1985), Wege & Long (1995).



PLATE 15

inches 2  
cm 5

47

48

49

50

ssp  
*aegithaloides*

ssp *pallida*

ssp  
*berlepschi*

ssp *cajabambae*

ssp *pileata*

52

ssp *latistriata*

51

ssp *andicola*

53

54

ssp *albigularis*

ssp *exterior*

55

ssp *peruviana*

ssp *striata*

56

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58





## Genus *LEPTASTHENURA* Reichenbach, 1853

### 47. Brown-capped Tit-spinetail

#### *Leptasthenura fuliginiceps*

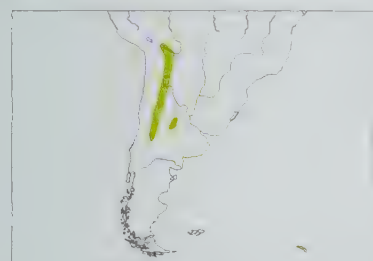
**French:** Synallaxe à tête brune **German:** Braunkappen-Meischlupfer **Spanish:** Tijeral Canelo

**Taxonomy.** *Synallaxis fuliginiceps* d'Orbigny and Lafresnaye, 1837, Sicasica, La Paz, Bolivia. Sister-species relationship with *L. yanacensis* suggested by similarities in plumage and tail pattern; simple plumage pattern and tail structure interpreted as indicating that both occupy a basal position in genus. Validity of race *paranensis* requires confirmation by quantitative analysis of apparent plumage differences. Two subspecies recognized.

#### **Subspecies and Distribution.**

*L. f. fuliginiceps* (d'Orbigny & Lafresnaye, 1837) - Andes of Bolivia (S La Paz S to Potosí and Tarija).

*L. f. paranensis* P. L. Selater, 1862 - NW & WC Argentina (Andes from Jujuy and Salta S to Mendoza, and mountains of Córdoba and San Luis).



**Descriptive notes.** 15-16 cm; 9-13 g. Small, slender, short-billed, long-tailed, acrobatic furnariid. Has pale, dull buff supercilia meeting across forehead, rather plain brownish face; crown brown, upper back paler and duller brown, becoming rufescent on lower back and uppertail-coverts; wings mostly rufous; tail long, strongly graduated, central rectrices with slightly thickened shafts and barbs progressively narrowing towards tip, giving forked, "spiny" appearance (less deeply "forked" than in most congeners), rufous; underparts dull pale tawny brownish, palest in centre of throat, with flanks and undertail-coverts tinged

rufescent; iris brown to dark brown; upper mandible black to dusky brownish-horn, lower mandible uniform horn to pearl-grey with dusky tip; tarsus and toes olive greenish, greyish-olive or grey. Sexes alike. Juvenile has slightly mottled breast, less distinctly defined crown, and rounded tips to rectrices. Race *paranensis* is apparently paler and greyer below and has duller, less brownish back than nominate. **VOICE.** Song apparently not described; call a faint insect-like "pree" given every 1-2 seconds.

**Habitat.** Arid montane scrub, semi-humid/humid montane scrub, *Polylepis* woodland; semi-humid woodland, forest edge; in montane scrub, occurs especially in ravines; *Polylepis australis* woodland in W Argentina. At 1500-3900 m, locally to 4200 m; mostly 1000-2500 m in Argentina (*paranensis*).

**Food and Feeding.** Arthropods; recorded diet items include Coleoptera eggs. Usually in pairs or small flocks; regularly in mixed-species flocks. Forages from understorey up to canopy. Gleans items from foliage and branches, occasionally vertical trunks; often hangs upside-down acrobatically. Seen to forage in direct association with *L. yanacensis* in Argentina.

**Breeding.** Season during austral spring-summer; eggs in Feb in S Peru and NW Argentina; nestlings in Jan-Feb and Apr and fledglings in Feb and Apr in Argentina. Presumably monogamous. Nest a ball of plant material lined with soft plant fibres, small twigs, down and feathers, placed in narrow crevice in rock or building. Clutch 2-3 eggs.

**Movements.** Mainly resident; some post-breeding downslope movement by S populations (*paranensis*).

**Status and Conservation.** Not globally threatened. Uncommon to common throughout range. Not well known.

**Bibliography.** Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), Hoy (1968b), Johnson (1967), Krabbe *et al.* (1996), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas & Bó (1987), Nellar (1993), Nores & Yzurieta (1981), Nores *et al.* (1983), Olrog (1956, 1963a), de la Peña (1988), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Salvador (1988), Stotz *et al.* (1996), Wetmore (1926).

### 48. Tawny Tit-spinetail

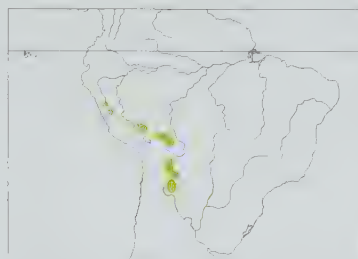
#### *Leptasthenura yanacensis*

**French:** Synallaxe fauve **German:** Roststirn-Meischlupfer **Spanish:** Tijeral de Yánc

**Taxonomy.** *Leptasthenura yanacensis* Carriker, 1933, Yánc, 15,000 feet [c. 4570 m], Ancash, Peru. Sister-species relationship with *L. fuliginiceps* suggested by similarities in plumage and tail pattern; simple plumage pattern and tail structure interpreted as indicating that both occupy a basal position in genus. Population in Cochabamba, in Bolivia, with whitish supercilium and paler underparts than N populations, almost certainly represents an undescribed taxon; specimen material from NW Argentina lacking. Monotypic.

**Distribution.** W & SE Peru (Ancash, N Lima, and E Andes in Cuzco and Puno) S to N Bolivia (La Paz, Cochabamba, Potosí, Tarija) and NW Argentina (Jujuy, Salta).

**Descriptive notes.** 15-16 cm; 10-12 g. Uniformly brightly coloured, unstreaked tit-spinetail with relatively long, thin bill. Has pale brown narrow supercilium (whitish in Cochabamba, in Bolivia), dark chestnut forehead, blending to duller dark brown crown and to reddish-brown back; wings mostly rufous-chestnut; uppertail-coverts and tail rufous-chestnut; tail long, strongly graduated, only 10 rectrices (all congeners have 12), central pair with slightly thickened shafts, barbs only slightly reduced on distal portions (shallowest "fork" in genus); fairly uniform tawny ochraceous below (paler in Cochabamba), palest on chin, darkest on flanks and undertail-coverts; iris brown to dark brown; bill black to dark greyish, sometimes pinkish base of lower mandible; tarsus and toes dark brown to olive-brown to grey (source of variation unknown). Sexes alike. Juvenile has faintly barred breast, sometimes lacks rufous on forehead, rectrices blunt-tipped. **VOICE.** Song a rough,



woodland in Bolivia, where it often fills "sentinel" role in such flocks. Forages from understorey up to canopy. Gleans food items from foliage and small branches, sometimes vertical trunks, starting from near ground; often hangs acrobatically upside-down; occasionally forages on rocks and on grassy slopes. Observed to forage in direct association with *L. fuliginiceps* in Argentina.

**Breeding.** Season probably begins at start of wet season in S Andes, about Oct-Nov; nest-building observed in Dec in S Bolivia and NW Argentina; eggs in Nov in SE Peru (Cuzco). Monogamous. Nest a dome-shaped ball of dried grass c. 25 cm in diameter, side entrance, lined with hairs, plant fibres and down, and feathers, placed 2-2.5 m up on horizontal branch of *Polylepis* tree. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Rare to locally common. Only data on densities from Bolivian *Polylepis* woodland, where widely overlapping home ranges, and average home-range size 5-7 ha. Occurs in Machu Picchu Historical Sanctuary, in Peru. First discovered in Argentina in 1996, and currently known to occur at at least six localities in that country. Main threats are heavy grazing by domestic livestock and uncontrolled fires, both of which prevent regeneration of woodland; cutting for timber, charcoal and firewood also a major problem. Agricultural intensification and planting of exotic trees, especially eucalyptus (*Eucalyptus*), also lead to soil erosion and general destruction and degradation of habitat.

**Bibliography.** Carriker (1933), Chebez *et al.* (1999), Fjeldså & Krabbe (1986, 1990), Fjeldså & Maijer (1996), Herzog *et al.* (2002), Krabbe *et al.* (1996), Mazar Barnett & Pearman (2001), Mazar Barnett, Clark *et al.* (1998), Nores & Yzurieta (1984), Parker (1981), Parker & O'Neill (1980), Parker *et al.* (1982), Pearman (2001), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Stotz *et al.* (1996), Vuilleumier (1969), Walker (2001).

### 49. Tufted Tit-spinetail

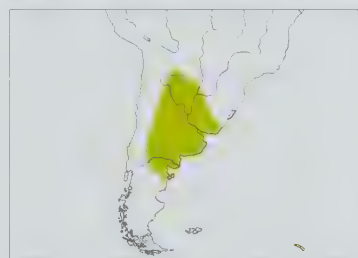
#### *Leptasthenura platensis*

**French:** Synallaxe de la Plata **German:** Haubenmeischlupfer **Spanish:** Tijeral Copetón

**Taxonomy.** *Leptasthenura platensis* Reichenbach, 1853, Río de la Plata, Argentina.

Plumage similarities have suggested to some that this and mostly parapatric *L. aegithaloides* are sister-species. Monotypic.

**Distribution.** N & C Argentina (Salta, Formosa and Corrientes S to N Chubut and S Buenos Aires), extreme SE Brazil (extreme W Rio Grande do Sul) and Uruguay; recorded also in S Paraguay.



**Descriptive notes.** 16-17 cm; 10-12 g. Typical tit-spinetail, but with short crest. Has thin pale supercilium, dull greyish-brown face obscurely marked brownish; crown and crest dark brown, streaked paler (pale feather shafts); back dull greyish-brown, uppertail-coverts paler, tinged tawny; wings mostly greyish-brown, coverts tipped paler, tertials edged paler; tail long, strongly graduated, central rectrices with slightly thickened shafts and with barbs narrowing towards tip, barbs greatly reduced on distal 3 cm of central rectrices (where inner webs deeply emarginated), mostly dark fuscous, webs of outer rectrices dull rufous

distally; throat to upper breast whitish, obscurely marked dark brownish, rest of underparts pale greyish-brown, slightly darker on flanks and undertail-coverts; iris brown; bill black, pale base of lower mandible; tarsus and toes dark olive-green. Sexes alike. Juvenile lacks crest, has crown and breast much less distinctly marked, back darker and faintly spotted, tail shorter with rectrices blunter.

**VOICE.** Song an accelerating, descending trill introduced by distinct sharp notes, "tsi, tsirrrrr". Calls an assortment of high-pitched, dry, squeaky notes, most commonly a series of short notes followed by sharp trill, e.g. "pit-pit-pit ... prrr", also described as "tee-ee-ee".

**Habitat.** Gallery forest, riparian thickets, arid lowland scrub; dry woodland (e.g. *Prosopis flexuosa*) and adjacent brushy areas and monte desert (e.g. with *Larrea divaricata*, *L. cuneifolia*, *Capparis atamisquea*, *Condalia microphylla*), also *espinillo* (*Prosopis-Acacia*) woodland. To 1000 m.

**Food and Feeding.** Arthropods; recorded items are Coleoptera larvae and small spiders. Usually in pairs or in small flocks, possibly family groups. Forages from understorey up to canopy. Gleans items from foliage, small branches and twigs; often hangs upside-down acrobatically.

**Breeding.** Season during austral spring-summer; eggs in Sept-Dec and nestlings in Oct-Dec in Argentina; nestlings in Oct in S Brazil. Presumably monogamous. Nest a cup of twigs, grasses, feathers and hairs, placed in natural tree cavity or old hole of woodpecker, such as Chequered Woodpecker (*Picoides mixtus*), or in old nest of other furnariid (*Furnarius rufus*, *F. cristatus*, *Schoeniophylax phryganophilus*, *Synallaxis frontalis*, *Cranioleuca pyrrhophia*, *Phacellodomus striatocollis*, *Anumbius annumbi* or *Coryphistera alaudina*). Clutch 2-4 eggs, possibly sometimes 6; incubation period c. 14-15 days; chicks fed by both parents, fledging period c. 15-16 days.

**Movements.** Resident; some extralimital records suggest a little seasonal movement or wandering.

**Status and Conservation.** Not globally threatened. Common in much of range. Recorded in Ybicui National Park, in Paraguay; status in Paraguay, however, requires further investigation.

**Bibliography.** Anon. (2003d), Belton (1984), Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Cuello (1985), Cueto *et al.* (1997), Hayes (1995), Mason (1985), Mazar Barnett & Pearman (2001), Narosky & Di



Giacomo (1993), Narosky *et al.* (1983), Navas & Bó (1987), Nellar (1993), Nores *et al.* (1983), Ochoa (1971), Olrog (1956, 1963a), Partridge (1953), de la Peña (1987, 1988, 1996, 1997), Pinto (1978), Ridgely & Tudor (1994), Salvador (1988), Short (1975), Sick (1993, 1997), Smyth (1928), Stotz *et al.* (1996), Vuilleumier (1993a), Wetmore (1926).

## 50. Plain-mantled Tit-spinetail

### *Leptasthenura aegithaloides*

**French:** Synallaxe mésange **German:** Zimtspiegel-Meischenschlüpfer **Spanish:** Tijeral Colinegro

**Taxonomy.** *Synallaxis* [sic] *Aegithaloides* Kittlitz, 1830, hills near Valparaíso, Chile.

Plumage similarities have suggested to some authors that this and *L. striolata* are sister-species, and to others that this and mostly parapatric *L. platensis* are sister-species. Geographical variation in colour follows Gloger's Rule, with populations from arid areas usually the palest in coloration. Four subspecies recognized.

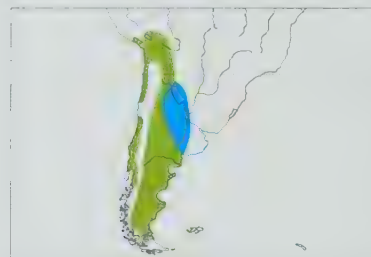
#### Subspecies and Distribution

*L. a. griseescens* Hellmayr, 1925 - coastal slope of S Peru (Arequipa S to Tacna) and N Chile (Tarapacá S to Atacama).

*L. a. berlepschi* Hartert, 1909 - Andes of S Peru (C Puno, E Tacna), N Chile (Tarapacá, Antofagasta), W Bolivia (La Paz S to Potosí) and NW Argentina (Jujuy S to Catamarca).

*L. a. aegithaloides* (Kittlitz, 1830) - C Chile (S Coquimbo S to N Aisén).

*L. a. pallida* Dabbene, 1920 - breeds W & S Argentina (La Rioja, S La Pampa and SW Buenos Aires S to Santa Cruz) and S Chile (EC Aisén, NE Magallanes); S populations migrate N in winter to N & C Argentina (Catamarca, Tucumán, E Buenos Aires).



**Descriptive notes.** 14-15 cm; 8-13 g. Typical tit-spinetail. N nominate race has white supercilium, dark brownish face with whitish streaking, streaks continuing to neck and malar area; crown dark brown, becoming paler posteriorly, with sharply defined broad golden-tawny streaks, hindneck with greyish-white streaks; back to uppertail-coverts dull brownish; upperwing-coverts dull brownish with dull rufous margins, remiges dull fuscous with dark rufous bases; tail long, strongly graduated, rectrices stiffened basally, elongated central pair with inner webs deeply emarginated (producing deeply forked appearance), fuscous brown with paler margins; throat whitish with some dark margins, these increasing along lower throat and to upper breast, rest of breast dull greyish-brown, belly, flanks and undertail-coverts slightly paler; iris brown; upper mandible blackish to dark grey-brown, lower mandible dark horn to greenish-grey, sometimes blackish tip; tarsus and toes grey to dark greyish-brown or blackish. Sexes alike. Juvenile has crown streaks and throat markings indistinct, back lightly spotted, tips of rectrices rounded. Race *griseescens* is paler throughout, has broader and paler crownstreaks, greyer back, more buffy rump, paler edges to wing-coverts, paler and greyer underparts; *berlepschi* is slightly larger than previous, back browner, tail markings buffy rather than greyish, underparts more buffy and lacking grey tones; *pallida* differs from nominate in slightly paler appearance, primaries edged whitish, rufous wing patch smaller. Voice. Song a high-pitched descending, broken trill lasting 2-3 seconds; also, frequently gives shorter, lower-pitched nasal trill, "prrr", and assortment of trills during interactions.

**Habitat.** Arid lowland scrub, arid montane scrub, monte woodland and scrub (e.g. *Baccharis tola*), matorral, often on rocky slopes with patches of brush; also scrub (e.g. *Atriplex*) on saltflats, and thorny dry woods; sometimes gardens and oases in non-breeding season. From near sea-level up to 4500 m.

**Food and Feeding.** Arthropods. Usually forages in pairs or in small groups, possibly family parties; in single-species flocks of up to 40 individuals in non-breeding season; regularly joins mixed-species flocks. Seeks food from understorey up to canopy. Gleans items from foliage and branches, using tail for support and balance; often hangs upside-down acrobatically; occasionally forages on grass and ground.

**Breeding.** Season during austral spring-summer; eggs in Dec in S Bolivia, Sept-Oct in S & E Argentina and C Chile, Oct-Nov in N Chile, and Dec in W & Feb in NW Argentina; nestlings in Nov in S and Feb in NW Argentina; fledglings in Feb-Mar in Chile and NW Argentina. Presumably monogamous. Nest a cup of small twigs, hairs and feathers c. 8-12 cm in diameter, placed in hole in small tree or large cactus, in crevice in rocks, cliff, dirt bank or building, or in abandoned domed nest of other bird (e.g. *Asthenes*). Clutch 2-4 eggs.

**Movements.** Mostly resident, but partially migratory in S; considerable downslope movement and local dispersal after breeding. Race *griseescens* disperses between oases separated by at least 50 km of unvegetated desert. S populations of *pallida* undertake post-breeding migration N to N & C Argentina, but seasonal movements not well understood.

**Status and Conservation.** Not globally threatened. Fairly common in much of its range. Occurs in Cerro La Campana and Nahuelbuta National Parks, in Chile. Appears able to tolerate modest habitat degradation.

**Bibliography.** Anon. (2003d), Araya & Chester (1993), Bond (1945), Canevari *et al.* (1991), Chebez *et al.* (1999), Contreras (1975, 1978), Cory & Hellmayr (1925), Cueto *et al.* (1997), Dabbene (1920), Fjeldsá & Krabbe (1990), Fraga & Narosky (1985), Grigera *et al.* (1996), Johnson (1967), Koeckpe (1958, 1963), Krabbe *et al.* (1996), Lönnberg (1903), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas & Bó (1987), Nores *et al.* (1983), Olrog (1948, 1963a), Parker *et al.* (1982), Peña (1961), de la Peña (1987, 1988), Remsen (2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ribero (1991), Ridgely & Tudor (1994), Stotz *et al.* (1996), Taczanowski (1884), Vuilleumier (1993a), Wetmore (1926).

## 51. Striolated Tit-spinetail

### *Leptasthenura striolata*

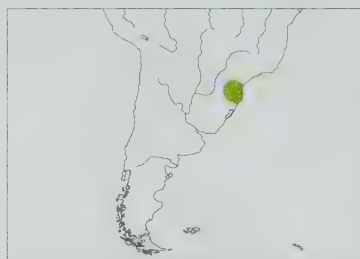
**French:** Synallaxe striolé **German:** Isabellstreifen-Meischenschlüpfer **Spanish:** Tijeral Brasileño

**Taxonomy.** *Synallaxis striolata* Pelzel, 1856, Curitiba, Paraná, Brazil.

Plumage similarities have suggested to some that this and *L. aegithaloides* are sister-species. Monotypic.

**Distribution.** SE Brazil from Paraná S to N Rio Grande do Sul.

**Descriptive notes.** 15-16 cm; 10-11 g. Has black crown with buff streaks, buff-whitish supercilium; upperparts brown, back with conspicuous buff streaks; wings dark brown with paler margins, rufous bases of remiges; tail long, strongly graduated, rectrices slightly stiffened basally, inner webs



in interior of tall forest, usually at edge. At 500-1100 m; one record near coast.

**Food and Feeding.** Arthropods. Usually forages in pairs, occasionally in mixed-species flocks, from understorey to canopy. Gleans food items from foliage and branches; often hangs upside-down acrobatically.

**Breeding.** Season during austral spring-summer; nestlings in Dec. Monogamous. Nest a platform of twigs mixed with moss, lined with feathers, placed in natural cavity or old hole of woodpecker (Picidae) 1-4-6 m up in tree, or in other cavity (e.g. inside cow skull placed above ground). Clutch size not documented; both sexes feed nestlings.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Atlantic Forest Mountains EBA. Fairly common to common within its limited range, and evidently common in human-disturbed habitats. Uncommon in Aparados da Serra National Park.

**Bibliography.** dos Anjos & Boçon (1999), dos Anjos *et al.* (1997), Belton (1984), Bencke *et al.* (2001), Cordeiro (2001), Cory & Hellmayr (1925), Parker & Goerck (1997), Pinto (1978), Ridgely & Tudor (1994), Sick (1993, 1997), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

## 52. Rusty-crowned Tit-spinetail

### *Leptasthenura pileata*

**French:** Synallaxe couronné **German:** Rostkappen-Meischenschlüpfer **Spanish:** Tijeral Coronado  
**Other common names:** Streak-crowned Tit-spinetail (*cajabambae*)

**Taxonomy.** *Leptasthenura pileata* P. L. Sclater, 1881, western slope of the coastal cordillera above Lima, 8000 feet [c. 2440 m], Peru.

Forms a superspecies with *L. xenothorax*, and considered conspecific by some authors; together, the two are presumably most closely related to *L. striata*. Race *cajabambae* has alternatively been considered a race of *L. striata*, but may merit species rank. Three subspecies recognized.

#### Subspecies and Distribution

*L. p. cajabambae* Chapman, 1921 - N & C Peru (Cajamarca S to Ancash, and dry interior slopes of E Andes S to Junín).

*L. p. pileata* P. L. Sclater, 1881 - WC Peru (Chillón and Rimac Valleys, in Lima).

*L. p. latistriata* Koeckpe, 1965 - SC Peru (W Huancavelica, Ayacucho).



**Descriptive notes.** 17-18 cm; 9-13 g. Typical tit-spinetail. N nominate race has thin pale supercilium narrowly bordered black above, face streaked blackish and whitish; crown fairly dark rufous-chestnut, contrasting sharply with dull brown back, latter with prominent whitish streaks widely bordered dark brown, streaks much fainter on rump but conspicuous again on uppertail-coverts; wings dark fuscous, dull rufescent edges of wing-coverts, paler tawny patch at base of primaries; tail long, strongly graduated, central rectrices with slightly thickened shafts and progressively narrower barbs, barbs greatly reduced on distal

part (inner webs deeply emarginated), mostly dark fuscous, inner webs of outer rectrices with prominent pale grey-brown spots; throat and upper breast dull greyish-white with dark spots and short streaks, rest of breast darker brownish-grey with paler broad streaks, belly slightly paler with streaks fainter, streaking more prominent again on undertail-coverts; iris brown to dark brown; bill black to dark horn, base of lower mandible pale horn, pinkish or yellowish; tarsus and toes blackish to brownish-horn. Distinguished from *L. xenothorax* by duller, darker crown, more heavily streaked back, longer tail, less strongly patterned throat, duller and more streaked below. Sexes alike. Juvenile undescribed. Race *cajabambae* has deep cinnamon crown with blackish stripes, greyish edges of upperwing-coverts, throat to breast paler and less distinctly streaked, appearing more mottled; *latistriata* is more heavily streaked above and on breast, greyer below. Voice. Song a slightly accelerating trill that increases in volume, 2 seconds long, repeated at intervals of 3-6 seconds; also slower, slightly descending trill and sharp "rick teek teek". Contact call "tsee" or "tsak".

**Habitat.** Arid montane scrub; riparian thickets and woodland edge; more humid montane scrub, *Alnus* thickets and *Polylepis* woodland in N & C Peru (*cajabambae*). From 2000 m to 4300 m, mostly 2500-3500 m.

**Food and Feeding.** Arthropods. Foraging sociality undescribed, probably in pairs. Forages from understorey up to canopy. Gleans food items from foliage and small branches; often hangs upside-down acrobatically.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Peruvian High Andes EBA. Fairly common in most of its range. Relatively poorly known species.

**Bibliography.** Bond (1945), Carriker (1933), Cory & Hellmayr (1925), Fjeldsá & Krabbe (1990), Hellmayr (1932), Koeckpe (1954, 1958, 1961a, 1970), Parker (1981), Parker *et al.* (1982), Ridgely & Tudor (1994), Schultenber (1986), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

## 53. White-browed Tit-spinetail

### *Leptasthenura xenothorax*

**French:** Synallaxe à gorge rayée **Spanish:** Tijeral Cejiblanco  
**German:** Graubauch-Meischenschlüpfer



**Taxonomy.** *Leptasthenura xenothorax* Chapman, 1921, Torontoy, Urubamba Valley, Cuzco, Peru. Forms a superspecies with *L. pileata*, and considered conspecific by some authors; together, the two presumably most closely related to *L. striata*. Monotypic.

**Distribution.** Andes of S Peru (Apuimac, Cuzco).



**Descriptive notes.** 17-18 cm; 13 g. Has white supercilium narrowly bordered black above, face streaked blackish and whitish; crown bright rufous-chestnut, contrasting with dull brown upperparts, back with whitish streaks bordered dark brown, rump with much fainter streaks, conspicuous streaks on uppertail-coverts; wings dark fuscous, dull rufescent edges of wing-coverts, paler tawny patch across flight-feathers; tail long, strongly graduated, central rectrices with slightly thickened shafts and progressively narrower barbs, barbs greatly reduced on distal part (inner webs deeply emarginated), mostly dark fuscous to blackish; throat to upper breast whitish, heavily mottled black, lower breast to undertail-coverts rather uniform pale grey-brown; iris brown; bill black, pinkish base of lower mandible; tarsus and toes black. Differs from *L. pileata* in brighter crown, less streaked upperparts, somewhat shorter tail, more heavily patterned throat, paler and plainer below. Sexes alike. Juvenile undescribed. Voice. Song a high-pitched trill lasting 2 seconds (longer when agitated), sometimes 1-4 introductory notes; also gives other trilled and rattling notes. Contact call "check" or "tjit", very similar to call of *L. pileata*.

**Habitat.** *Polylepis* woodland, primarily with *Gynoxys*; occasionally in adjacent scrub, e.g. *Escallonia*. At 3600-4550 m.

**Food and Feeding.** Arthropods. Usually in pairs or in groups of 3-5, possibly family parties; occasionally in mixed-species flocks. Forages from understorey to canopy, usually 0.5-4 m above ground. Gleans items from mosses, lichens, bark, dead branches and dead leaves, rarely from foliage; often hangs upside-down acrobatically.

**Breeding.** Virtually nothing known. Adult seen attending nest-hole in *Polylepis* tree, in Nov.

**Movements.** Resident; some limited downslope movement during snowstorms.

**Status and Conservation.** ENDANGERED. Restricted-range species: present in Peruvian High Andes EBA. Uncommon to locally common within very limited range; known from just a few localities, including Machu Picchu Historical Sanctuary. Rare in Vilcabamba relict forest, where density 4-8 birds/5 ha. Estimates of total population vary from only a few hundred individuals to, possibly, 1500; c. 30-50 birds at Abra Málaga (Cuzco). *Polylepis* woodland is an endangered habitat in most of the Andes because of cutting for firewood, and this species' existence depends, therefore, on some of remaining stands of *Polylepis* being preserved within its small range; regeneration of woodland often prevented by grazing and uncontrolled fires. Persists in, or at least ranges into, tiny degraded forest fragments as small as 0.25 ha in size.

**Bibliography.** Chapman (1921a, 1921b), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cory & Hellmayr (1925), Engblom *et al.* (2002), Fjeldsa (1987, 1991), Fjeldsa & Kessler (1996), Fjeldsa & Krabbe (1990), Fjeldsa *et al.* (1987), Parker & O'Neill (1980), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Walker (2001), Wege & Long (1995).

## 54. Streaked Tit-spinetail

### *Leptasthenura striata*

**French:** Synallaxe strié **German:** Rostspiegel-Meischenschlüpfer **Spanish:** Tijeral Listado  
**Other common names:** Streak-backed Tit-spinetail

**Taxonomy.** *Synallaxis striata* R. A. Philippi [Krumwiede] and Landbeck, 1863, Cordillera of Arica, "Peru" (= Chile?).

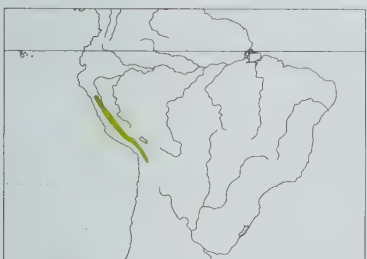
Plumage features suggest close relationship to *L. pileata* and *L. xenothorax*. Similarities in plumage to allopatric population of former have led to taxonomic confusion between the two; differences greatest where the two are sympatric, suggesting character displacement. Three subspecies recognized.

#### Subspecies and Distribution.

*L. s. supercilialis* Hellmayr, 1932 - W Andes of W Peru (Ancash, Lima).

*L. s. albigularis* Morrison, 1938 - W Andes in Huancavelica (SW Peru).

*L. s. striata* (R. A. Philippi [Krumwiede] & Landbeck, 1863) - Andes of extreme SW Peru (Arequipa S to Tacna) and NW Chile (Tarapacá).



**Descriptive notes.** 15-16 cm; 8-10 g. One of the smallest tit-spinetails. N nominate race has whitish supercilium, brownish auriculars faintly streaked; crown pale rufous with conspicuous narrow black streaks; back dark brownish with bold whitish streaks, rump paler brown with faint streaks, uppertail-coverts dark brown with tawny streaks; wings dark brown, tawny edges of wing-coverts, broad tawny-rufous patch at base of primaries; tail long, strongly graduated, central rectrices with slightly thickened shafts and barbs narrowing towards tip, giving strongly forked appearance, dark fuscous, pale brown areas on inner webs, pale edges on outer rectrices; throat whitish with indistinct blackish flecks, blending to greyish breast with faint streaks, belly and undertail-coverts whitish, blending to grey-brown flanks; iris brown to dark brown; bill black, base of lower mandible yellowish or pinkish; tarsus and toes black to dark grey. Sexes alike. Juvenile has grey-brown crown barely streaked, wings more extensively rufous, breast feathers with dark edges. Race *superciliaris* has more conspicuous supercilium; *albigularis* has supercilium greatly reduced or absent, plain throat lacking spots, unstreaked rump and uppertail-coverts. Voice. Song a long descending trill; contact call "trit".

**Habitat.** Arid montane scrub (e.g. *Baccharis*), sometimes quite sparse, often with cacti; also *Polylepis* woodland in S of range (nominate race). Mainly 2000-4000 m; primarily 1500-2500 m, locally to near sea-level, in N of range (*superciliaris*).

**Food and Feeding.** Arthropods. Feeding sociality undescribed; likely to be in pairs or small groups, as with congeners. Forages from understorey up to canopy. Gleans items from foliage and small branches; often hangs upside-down acrobatically. Occasionally picks prey from ground.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common in most of range. Relatively poorly known. Possibly at some risk from habitat loss in S parts of range.

**Bibliography.** Araya & Chester (1993), Carriker (1933), Cory & Hellmayr (1925), Fjeldsa & Krabbe (1990), Hellmayr (1932), Johnson, A. W. (1967, 1972), Koepecke (1954, 1958, 1970), Morrison (1939), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Stotz *et al.* (1996), Zimmer (1930).

## 55. Andean Tit-spinetail

### *Leptasthenura andicola*

**French:** Synallaxe des Andes

**German:** Dunkelbrauner Meischenschlüpfer

**Spanish:** Tijeral Andino

**Taxonomy.** *Leptasthenura andicola* P. L. Selater, 1870, Panza, southern slope of Chimborazo, Ecuador.

Plumage similarities suggest to some that this species is sister to a group that consists of *L. pileata*, *L. xenothorax* and *L. striata*. Proposed race *boliviana* (N Bolivia) described as like *peruviana* but with back streaks wider, outer webs of secondaries blacker and lacking rufous, and rectrices blacker and wider, but considered not diagnosable by later authors. Five subspecies recognized.

#### Subspecies and Distribution.

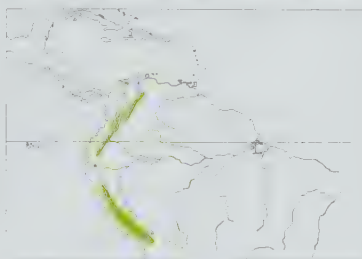
*L. a. extima* Todd, 1916 - N Colombia (Santa Marta Mts).

*L. a. certhia* (Madarász, 1903) - Andes of W Venezuela (Mérida, Trujillo, presumably also Táchira).

*L. a. exterior* Todd, 1919 - E Andes of N Colombia (Boyacá, Cundinamarca).

*L. a. andicola* P. L. Selater, 1870 - C Andes of Colombia (S from Tolima) S to Ecuador (S to N Azuay on W slope and to Cotopaxi and SW Napo on E slope, also in S Zamora-Chinchepe).

*L. a. peruviana* Chapman, 1919 - Andes of W & S Peru (Ancash S locally to Arequipa and Puno) and N Bolivia (La Paz); sight report from N Chile (Tarapacá).



**Descriptive notes.** 16-17 cm; 15-16 g. Dark-est and most heavily marked tit-spinetail. N nominate race has conspicuous broad whitish supercilium that meet across forehead, brownish auriculars; crown rufous with black streaks, upperparts blackish-brown with conspicuous broad whitish streaks; wings dark brownish, faint rufescent edges of wing-coverts; tail long, strongly graduated, central rectrices with slightly thickened shafts and barbs narrowing towards tip, appearing forked, blackish-brown, buff outer webs except for central rectrices; throat white with short dark streaks; underparts brownish with conspicuous broad whitish streaks, flanks and lower belly paler with streaks less sharp; iris dark brown to reddish-brown; bill blackish, slightly paler base of lower mandible; tarsus and toes blackish. Sexes alike. Juvenile has crown streaking darker or reduced, belly mottled rather than streaked. Race *extima* is smaller, has broader and more rufescent edges of wing-coverts, conspicuous rufous wingband, paler crown streaks, narrower and more buffy supercilium, broader and whiter back streaks, more spots on throat, more buffy belly virtually unstreaked; *certhia* is like previous, but wingband reduced, wing-coverts nearly lack edgings, crownstreaks paler, belly greyer, has whiter supercilium, back streaks, throat and chest; *exterior* has brighter rufous crown with narrower streaks, broader white supercilium and back streaks, rufous-tinged auriculars, rufous wing-covert edges, large rufous wing patch, whiter throat, brownish belly tinged rufescent; *peruviana* differs from nominate in much paler crown with narrow black feather margins, paler and more faintly streaked auriculars, more conspicuously cinnamon-edged wing-coverts, more strongly dark-margined ventral streaking. Voice. Song described as high-pitched descending series of notes that starts and finishes with a trill, also as hesitating series of short, high-pitched trills; also gives monotonic trill lasting 2 seconds, and weak, high-pitched "tee-zit". Contact call "zik", "tzi-dik" or "tik".

**Habitat.** Arid, semi-humid/humid montane scrub, páramo grassland, and *Polylepis* woodland; scrubby woodland, patches of scrub on steep slopes, and bushy páramo. At 3000-4500 m.

**Food and Feeding.** Arthropods. Usually in pairs or small groups, occasionally in mixed-species flocks. Forages at all levels. Gleans items from shrub foliage, small branches and their epiphytes, *Espeletia* foliage and seedheads, and from flowers (especially *Senecio*); occasionally hangs upside-down acrobatically.

**Breeding.** Nestlings in Feb and Apr in C & S Peru; fledglings in Nov and May in Venezuela, Sept in C Colombia and Aug in SW Peru. Presumably monogamous. Two nests found; nest is a ball of plant fragments 16 cm in diameter, side entrance, chamber profusely lined with feathers and hair, hidden 1-2 m above ground against trunk of *Puya raimondii* and adjacent debris. Clutch 2 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common in much of its range; tends to be uncommon to rare in S of range (*peruviana*). Occurs in Puracé National Park, in Colombia, and Cotopaxi National Park and Las Cajas National Recreation Area, in Ecuador.

**Bibliography.** Carriker (1935a), Cory & Hellmayr (1925), Dorst (1957), Fjeldsa & Krabbe (1990), Hilty (2003a), Hilty & Brown (1986), Johnson (1967), Koepecke (1970), Krabbe *et al.* (1997), Meyer de Schauensee (1945), Morrison (1939), Olivares (1969), Parker *et al.* (1982), Pearson (1953), Pfeifer *et al.* (2001), Remsen (2003a), Remsen & Traylor (1989), Renjifo *et al.* (1997), Ribero (1991), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stotz *et al.* (1996), Taczanowski (1884), Todd & Carriker (1922b), Vuilleumier & Ewert (1978), Williams & Tobias (1994).

## 56. Araucaria Tit-spinetail

### *Leptasthenura setaria*

**French:** Synallaxe à filets

**German:** Araukarien-Meischenschlüpfer

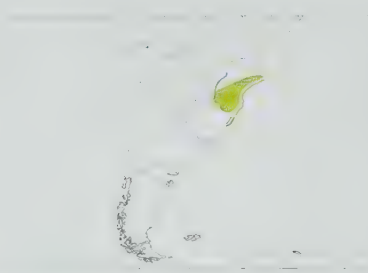
**Spanish:** Tijeral de las Araucarias

**Taxonomy.** *Synallaxis setaria* Temminck, 1824, São Paulo, Brazil; error = Castro, Paraná, Brazil. Formerly placed in a monotypic genus *Dendrophylax* or *Bathmidura*. Differs from other members of current genus in bill and tail shapes and in details of plumage pattern. Monotypic.

**Distribution.** SE Brazil (extreme SE Minas Gerais and S Rio de Janeiro to N Rio Grande do Sul) and NE Argentina (Misiones).

**Descriptive notes.** 17-19 cm; 11 g. Relatively long-tailed tit spinetail with short crest, comparatively long and decurved bill. Has thin white supercilium, face streaked black and white; crown





and crest blackish with narrow pale shaft streaks, upperparts reddish-brown, very faint pale shaft streaks on upper back; wings mostly rufous, remiges blackish with broad rufous at bases; tail long, strongly graduated, rectrices stiffened basally, barbs greatly reduced on distal 3 cm of inner rectrices, deeply (4-5 cm) forked, mainly reddish-brown, inner webs of inner three pairs of rectrices darker brown; malar area, throat and upper breast streaked blackish on whitish background, which fades to tawny-buff on breast and below, becoming deeper and richer on flanks; iris brown or grey; bill blackish, pale base of lower mandible; tarsus and toes greyish-green. Sexes alike. Juvenile has less distinct pattern, crown almost unstreaked brownish. **VOICE.** Song a high-pitched descending and accelerating trill of squeaky notes; rapid chattering notes when excited.

**Habitat.** Restricted to *Araucaria angustifolia* trees, whether in forest, woodland or scattered groves; occurs in gardens and in plantations. Recorded at 750-1900 m, generally below 1400 m.

**Food and Feeding.** Arthropods. Usually forages singly or in pairs, from mid-storey to canopy. Gleans food items from *Araucaria* needles and branches; often hangs upside-down acrobatically.

**Breeding.** Season probably during austral spring-summer; nest-building in Sept. Presumably monogamous. Nest a ball of vegetation, including moss, c. 8 cm in diameter, placed high in tree. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Atlantic Forest Mountains EBA. Fairly common to common. Common in Aparados da Serra National Park, in Brazil, and in La Araucaria Provincial Park, in Argentina. Its dependence on a single tree species means that any destruction of this represents a threat. In Brazil, most *Araucaria* forest in Paraná has been cleared for agriculture and pasture; in Argentina, has colonized areas newly planted with *Araucaria*, but these often subsequently replaced by pines (*Pinus*). Seems able to adapt to human disturbance as long as *Araucaria* trees not removed.

**Bibliography.** de Andrade (1996), dos Anjos & Boçon (1999), dos Anjos *et al.* (1997), Belton (1984, 2003), Boçon (1993), Canevari *et al.* (1991), Chebez (1989, 1994), Chebez *et al.* (1999), Cordeiro (2001), Cory & Hellmayr (1925), Fraga & Narosky (1985), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olrog (1963a), Parker & Goerck (1997), de la Peña (1988), Pinto (1978), Ridgely & Tudor (1994), Sick (1993, 1997), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

## Genus *SPARTONOICA* J. L. Peters, 1950

### 57. Bay-capped Wren-spinetail

#### *Spartonoica maluroides*

**French:** Synallaxe des marais

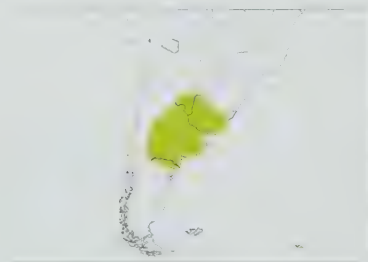
**Spanish:** Canastero Enano

**German:** Strichelrücken-Dickichtschlüpfer

**Other common names:** Wren-like Spinetail

**Taxonomy.** *Synallaxis maluroides* d'Orbigny and Lafresnaye, 1837. Buenos Aires, Argentina. Placed in *Synallaxis* by some authors, but thought to be more closely related to *Asthenes* or *Leptasthenura* by others. Monotypic.

**Distribution.** NC Argentina (Chaco and Corrientes S to Córdoba, Mendoza, La Pampa and Buenos Aires), extreme SE Brazil (S Rio Grande do Sul) and Uruguay.



**Descriptive notes.** 12-13 cm; 10-12 g. Typical spinetail in size and shape, but distinctive plumage. Has whitish supercilium, faint dark eyeline and pale brownish face; rufous crown contrasts strongly with conspicuously black-streaked light brown back; wing-coverts brown, centres blackish; remiges black with broad rufous at bases; tail long and strongly graduated, greatly reduced barbs on distal portion of central rectrices creating very "spiny" appearance, mostly brownish; whitish below, blending to buffy brown on sides and flanks; iris whitish to pale bluish; upper mandible blackish, lower mandible whitish to pinkish with dark tip; tarsus and toes light tan. Sexes alike. Juvenile has light brown crown, more buffy, less whitish, underparts, sides slightly mottled brownish, streaks less sharply defined. **VOICE.** Dry mechanical trill 2-3 seconds long, somewhat insect-like; prolonged, thin, weak "tch-tch-tch..."

**Habitat.** Freshwater and brackish marshes with extensive emergent vegetation; also in tall wet grass (*Paspalum quadrifarium*) and boggy areas with *Eryngium*. To 900 m.

**Food and Feeding.** Arthropods; reported items are Coleoptera, Neuroptera and Hymenoptera. Usually forages singly. Gleans food items from marsh vegetation.

**Breeding.** Eggs in Dec and fledgling in Jan. Nest a deep cup or basket of reeds and grass, sheltered from above by dense vegetation, placed at base of dense marsh vegetation or sometimes on ground. Clutch 3-4 eggs. No further information.

**Movements.** Resident; seasonal changes in abundance suggest local movements.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Uncommon to fairly common; probably overlooked. Subject to the usual pressures faced by all wetland-dependent species, including drainage of marshes, as well as the drying-out of marshland caused by planting with pines (*Pinus*) and eucalyptus (*Eucalyptus*).

**Bibliography.** Belton (1984), Canevari *et al.* (1991), Chebez *et al.* (1999), Comparatore *et al.* (1996), Cory & Hellmayr (1925), Cuello (1985), Di Giacomo *et al.* (2001), Fraga & Narosky (1985), Isacch & Martínez (2001), Maceda *et al.* (1999), Mauricio & Bencke (2000), Mazar Barnett & Pearman (2001), Narosky (1973), Narosky *et al.* (1983), Nores & Yzurieta (1979b), Nores *et al.* (1983), Olrog (1963a), de la Peña (1988), Pereyra (1933), Peters (1950), Pinto (1978), Ridgely & Tudor (1994), Sclater (1890), Sclater & Hudson (1888), Stotz *et al.* (1996), Wetmore (1926), Willis (1992b), Zotta (1936).

## Genus *SYLVIORTHORHYNCHUS*

Des Murs, 1847

### 58. Des Murs's Wiretail

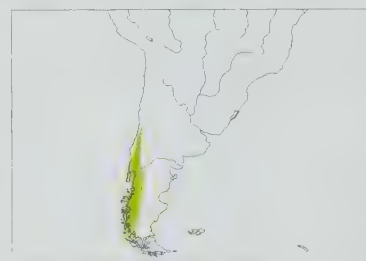
#### *Sylviorthorhynchus desmursii*

**French:** Synallaxe de Des Murs **German:** Fadenschwanzschlüpfer **Spanish:** Tijeral Colilargo  
**Other common names:** Des Murs's Spinetail

**Taxonomy.** *Sylviorthorhynchus Desmursii* Des Murs, 1847, province of Valdivia, particularly near Corral, Chile.

General morphology and tail structure suggest possible relationship to *Schizoeaca*, and nests are at least superficially similar. Monotypic.

**Distribution.** C & S Chile from Aconcagua S to N Magallanes (including Chiloé I and other near-shore islands) and extreme W Argentina (Neuquén S to Santa Cruz).



**Descriptive notes.** 21-23 cm; 9-11g. Small furnariid with preposterously long tail and relatively long, thin, straight bill. Has indistinct pale supercilium, bright orange-rufous forehead blending to rufous-brown crown, upperparts, wings and tail; tail very unusual, only 6 rectrices, central pair extremely long (c. 14 cm) with shafts thickened, barbs very short and somewhat disintegrated, lateral pairs much shorter (c. 8 cm) with shafts not so thick, outer pair tiny (c. 2 cm) and almost hair-like; underparts fairly uniform ochraceous, slightly darker on sides, flanks and undertail-coverts, palest in centre of belly; iris dark brown to blackish-brown; upper mandible blackish, lower mandible whitish with blackish tip; tarsus and toes brownish-horn. Sexes alike. Juvenile undescribed. **VOICE.** A rhythmic, rolling series of repeated "jerr-jerr" notes lasting c. 1-5 seconds; also loud descending trill ending with squeaky notes.

**Habitat.** Southern temperate forest, secondary forest; cool, humid forest dominated by *Nothofagus*, and woodland, especially in or near extensive thickets of *Chusquea* bamboo; to 1000 m.

**Food and Feeding.** Arthropods. Usually forages in pairs, from undergrowth to mid-storey. Gleans items from foliage and twigs.

**Breeding.** Season during austral spring-summer; eggs in Nov and fledglings in Jan-Feb. Presumably monogamous. Nest a ball of dry grass, twiglets, moss, leaves and hair, lined with feathers, with side entrance, placed c. 1 m above ground in dense undergrowth. Clutch 3-4 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Status uncertain; appears reasonably common in most of range. Occurs in Puyehué, Nahuelbuta and Cerro La Campana National Parks, in Chile. This species' reluctance to enter open habitats may accentuate effects of forest fragmentation on population structure.

**Bibliography.** Araya & Chester (1993), Barros (1960), Blondel *et al.* (1984), Canevari *et al.* (1991), Chebez *et al.* (1999), Contreras (1975), Cory & Hellmayr (1925), Ijelds & Krabbe (1990), Grigera *et al.* (1996), Johnson (1967), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olrog (1948, 1963a), de la Peña (1988), Pereyra (1951), Radboone (1935), Rasmussen & López (1988), Ridgely & Tudor (1994), Sieving *et al.* (1996), Stotz *et al.* (1996), Vuilleumier (1985, 1991).









PLATE 16

inches 3  
cm 8



# Genus *SCHIZOEACA* Cabanis, 1873

## 59. Perija Thistletail

### *Schizoeaca perijana*

**French:** Synallaxe des Perija **German:** Perija-Distelschwanz **Spanish:** Piscuiz de Perijá

**Taxonomy.** *Schizoeaca perijana* Phelps, Jr., 1977, camp "Frontera 2", Sierra de Perijá, 3000 m, Zulía, Venezuela.

Forms a superspecies with other members of genus, as a series of non-overlapping mountain-top replacements, and all sometimes considered conspecific; their vocalizations seem fairly close, but plumage patterns differ to an extent not found within species-level taxa in the Furnariidae. Monotypic.

**Distribution.** Perijá Mts in N Colombia and NW Venezuela.



**Descriptive notes.** 19-22 cm; 16-21 g. Typical thistletail, with long ragged-looking tail, fairly slender bill. Has faint greyish supercilium; crown, upperparts and tail greyish olive-brown, slightly greyer on crown, wing-coverts edged chestnut, bases of remiges chestnut; tail long, strongly graduated, deeply forked, barbs reduced in density and length distally; cinnamon-buff chin spot, otherwise brownish-grey below; iris reddish-brown; upper mandible black, lower mandible greyish with black tip; tarsus and toes grey. Sexes alike. Juvenile undescribed. **VOICE.** Undescribed.

**Habitat.** *Páramo* grassland, in areas of dense undergrowth and adjacent grass in timber-line ecotone, at edge of humid cloudforest; 3000-3400 m.

**Food and Feeding.** Arthropods; berries evidently taken occasionally. Forages singly or in pairs in undergrowth. No information on techniques; probably gleans items from foliage and branches.

**Breeding.** Adults in breeding condition and immatures recorded in Jul. No further information.

**Movements.** Presumably resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Colombian East Andes EBA. Known from very few localities. Small range, c. 150 km<sup>2</sup>, and linear nature of its habitat indicate that total population is rather small, currently estimated to be in the range 250-999 individuals; no data on population trends. Some of the population presumably live within Sierra de Perijá National Park, but that park does not provide effective protection. Habitat at lower elevations, below c. 2000 m, is threatened by a number of human activities, but at higher levels, where this thistletail occurs, habitat not under any immediate threat.

**Bibliography.** Fjeldså & Krabbe (1990), Hilty (2003a), Hilty & Brown (1983, 1986), Phelps (1977b), Remsen (1981), Renjifo *et al.* (1997), Ridgely & Tudor (1994), Rodner *et al.* (2000), Rodríguez & Rojas-Suárez (1995), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

## 60. Ochre-browed Thistletail

### *Schizoeaca coryi*

**French:** Synallaxe de Cory **German:** Ockerbrauen-Distelschwanz **Spanish:** Piscuiz de Cory  
**Other common names:** Cory's Thistletail

**Taxonomy.** *Synallaxis coryi* Berlepsch, 1888, Andes of Mérida, Venezuela.

Forms a superspecies with other members of genus, as a series of non-overlapping mountain-top replacements, and all sometimes considered conspecific; their vocalizations seem fairly close, but plumage patterns differ to an extent not found within species-level taxa in the Furnariidae. Monotypic.

**Distribution.** Andes of W Venezuela (Trujillo S to N Táchira).



**Descriptive notes.** 16-18 cm; 15-18 g. Typical thistletail, with long ragged tail, rather slender bill. Has ochraceous supercilia, darker face; forehead dull ochraceous rufous, blending to olive-brown on crown, upperparts and tail; wings slightly darker, mostly dull reddish-brown; tail long, strongly graduated and deeply forked, with barbs reduced in density and length distally, giving ragged, pointed look; chin spot tawny-rufous, underparts pale grey-brown, almost whitish in centre of belly; iris dark brown to grey-brown; bill dark greyish-brown, pinkish base of lower mandible; tarsus and toes bluish-grey. Sexes alike. Juvenile

undescribed. **VOICE.** Song a dry, rattling trill c. 1.5 seconds long, decelerates at end, "pipipi-pi-pi-pi-pi-pi-pi-pi, pi, pi, pi, pt, pt". Call a high-pitched, nasal "meeow", also squeaky, rodent-like "peeap"; alarm a high "pé-d-deet".

**Habitat.** *Páramo* grassland; dense undergrowth and adjacent grass in timber-line ecotone (especially with *Hypericum*), edge of humid cloudforest, and tall *páramo* vegetation (e.g. *Espeletia*, *Stevia lucida*); also openings in cloudforest at lower elevations. Mainly 3500-4100 m, locally down to 2800 m.

**Food and Feeding.** Mostly arthropods, including Coleoptera and Orthoptera; seeds also recorded in diet. Forages singly or in pairs, occasionally in mixed-species flocks. Gleans prey from foliage and small branches in understorey; occasionally on ground.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Cordillera de Mérida EBA. Uncommon to fairly common within limited range. Linear nature of habitat occupation suggests that its total population is rather small.

**Bibliography.** Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Hilty (2003a), Meyer de Schauensee & Phelps (1978), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vuilleumier & Ewert (1978).

## 61. White-chinned Thistletail

### *Schizoeaca fuliginosa*

**French:** Synallaxe à menton blanc **German:** Weißkinn-Distelschwanz **Spanish:** Piscuiz Barbiblanco  
**Other common names:** Andean Thistletail, White-chinned Spinetail

**Taxonomy.** *Synallaxis* [sic] *fuliginosa* Lafresnaye, 1843, Colombia = Bogotá.

Forms a superspecies with other members of genus, as a series of non-overlapping mountain-top replacements, and all sometimes considered conspecific; their vocalizations seem fairly close, but plumage patterns differ to an extent not found within species-level taxa in the Furnariidae. Is almost certainly paraphyletic with regard to *S. griseomurina* (distribution of which it brackets to the N and S), which is almost certainly more closely related to a parapatric race (probably nominate) of present species than are latter's N and S groups to each other; nominate race shares with that species a plumage feature (white eyering) not found in S races *peruviana* and *plengei*. Diagnosability of *fuliginosa* doubted by some authors, but specimens are readily distinguishable by back colour alone. Four subspecies recognized.

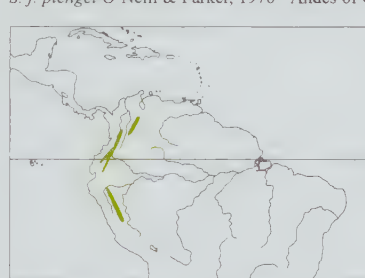
**Subspecies and Distribution.**

*S. f. fuliginosa* (Lafresnaye, 1843) - W Venezuela (SW Táchira), Colombia (E Andes S to Cundinamarca) and Ecuador (S on W slope to Pichincha and on E slope to NW Morona-Santiago).

*S. f. fumigata* Borrero, 1960 - C Andes of Colombia (S Caldas S to Nariño).

*S. f. peruviana* Cory, 1916 - Andes of N Peru (Amazonas).

*S. f. plengei* O'Neill & Parker, 1976 - Andes of C Peru (San Martín S to Pasco).



**Descriptive notes.** 18-20 cm; 14-20 g. Largest thistletail. Nominate race has inconspicuous greyish-tawny supercilium behind eye, whitish eyering, blackish to dark brown lores and face; crown and upperparts dark reddish-brown, wings tinged brighter; tail long, strongly graduated, deeply forked, barbs reduced in density and length distally, producing ragged, pointed look; chin whitish, blending to greyish underparts, tinged brownish on flanks; iris brown to blue-grey or greenish-grey (reported as white in Venezuela); upper mandible black to dark grey, lower mandible dark with pinkish to whitish base; tarsus

and toes blue-grey to grey. Sexes alike. Juvenile undescribed. Races differ from nominate mainly in colour of upperparts: *fuliginosa* has a darker back, also browner, less grey, underparts; *peruviana* is slightly duller above, with darker chin, virtually no eyering, and grey or blue-grey lower mandible; *plengei* is slightly redder above, including tail, with longer and whiter supercilium, dark grey lower throat with whitish streaking. **VOICE.** Song a high-pitched, weak, slightly accelerating and ascending trill that lasts c. 2-3 seconds; also descending series of high-pitched notes accelerating into trill, as well as slightly ascending series of tripled notes, "tididit, tididit, tididit". Call a high-pitched, sharp, penetrating "pyeek" or "kick", sometimes in series.

**Habitat.** *Páramo* grassland and elfin forest; dense undergrowth in timber-line ecotone and edge of humid cloudforest, often mixed with grass and ferns; also locally in *Polylepis* woodland. Mainly 2800-4000 m, locally down to 2300 m.

**Food and Feeding.** Mostly arthropods, but small seeds also recorded in diet. Forages singly or in pairs, rarely in mixed-species flocks. Gleans items from foliage and small branches in understorey, with occasional acrobatic manoeuvres.

**Breeding.** Presumably monogamous. Nest a ball of moss, grass and plant down, placed near ground in grass. Clutch 2 eggs. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Generally fairly common in appropriate habitat. Linear nature of its habitat means that total population likely to be rather small; also, timber-line habitats have been greatly altered and reduced by fire and grazing throughout most of the Andes.

**Bibliography.** Borrero (1960), Carriker (1933), Chapman (1926), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Graves (1985), Hilty (2003a), Hilty & Brown (1986), O'Neill & Parker (1976), Olivares (1969), Parker *et al.* (1982), Pfeifer *et al.* (2001), Remsen (1984b, 2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Salaman (1994), Stotz *et al.* (1996), Vaurie *et al.* (1972), Vuilleumier (1969), Vuilleumier & Ewert (1978).

## 62. Mouse-coloured Thistletail

### *Schizoeaca griseomurina*

**French:** Synallaxe souris **German:** Olivrücken-Distelschwanz **Spanish:** Piscuiz Ratón

**Taxonomy.** *Synallaxis griseo-murina* P. L. Sclater, 1882, San Lucas, Loja, Ecuador.

Forms a superspecies with other members of genus, as a series of non-overlapping mountain-top replacements, and all sometimes considered conspecific; their vocalizations seem fairly close, but plumage patterns differ to an extent not found within individual species-level taxa in Furnariidae. Present species is almost certainly paraphyletic with regard to *S. fuliginosa* (which brackets its distribution to N and S); probably closest to latter's nominate race, sharing with it the feature of a white eyering. Monotypic.

**Distribution.** Andes of S Ecuador (S from Azuay and Morona-Santiago) and N Peru (Piura, Cajamarca).





**Descriptive notes.** 18-20 cm; 16-20 g. Relatively dark thistletail. Has brownish face with conspicuous white eyering, pale line behind eye; crown and entire upperparts, including wings and tail, uniform dark greyish-brown to olive-brown; tail long, strongly graduated, deeply forked, barbs reduced in density and length distally, giving ragged, pointed appearance; chin greyish-white, blending to greyish throat and breast and to paler grey belly, flanks tinged brownish; iris brown; upper mandible blackish to dark grey, lower mandible paler grey to blue-grey, sometimes with blackish tip; tarsus and toes grey to blue-grey. Sexes alike.

Juvenile undescribed. **Voice.** Song described as ascending series of "sweetee" notes accelerating into trill, c. 2 seconds long, given at 6-second intervals; call a sharp "peent" and high-pitched, descending "pseeew".

**Habitat.** *Páramo* grassland; inhabits dense undergrowth in timber-line ecotone, edge of humid cloudforest, often mixed with grass and ferns, and *Polylepis* woodland. Mostly 2800-4000 m, locally down to 2500 m; isolated population at 2150 m in N Peru (R Comainas drainage).

**Food and Feeding.** Arthropods. Forages singly or in pairs, rarely in mixed-species flocks. Gleans food items from foliage and small branches in understorey, usually within 1 m of ground.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Central Andean *Páramo* EBA. Fairly common to uncommon in suitable habitat. Total population rather small owing to relatively small area of distribution and linear nature of its habitat. Occurs in Las Cajas National Recreation Area, in Ecuador. Burning and grazing of timber-line habitats have greatly reduced extent of areas suitable for occupation by this species.

**Bibliography.** Chapman (1926), Cory & Hellmayr (1925), Fjeldså & Krabbe (1986, 1990), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schulenberg & Awbrey (1997a), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

## 63. Eye-ringed Thistletail

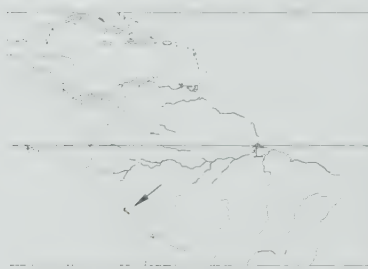
### *Schizoeaca palpebralis*

**French:** Synallaxe à lunettes **German:** Brillen-Distelschwanz **Spanish:** Piscuiz de Anteojos  
**Other common names:** Rufous-chinned Thistletail

**Taxonomy.** *Schizoeaca palpebralis* Cabanis, 1873, Maraynioc, Junin, Peru.

Forms a superspecies with other members of genus, as a series of non-overlapping mountain-top replacements, and all sometimes considered conspecific; their vocalizations seem fairly close, but plumage patterns differ to an extent not found within species-level taxa in the Furnariidae. Monotypic.

**Distribution.** Andes of C Peru (Junin).



**Descriptive notes.** 18-20 cm; 16-18 g. Typical thistletail. Conspicuous broad white eyering stands out on chestnut-brown face with darker brown lores; crown and upperparts, including wings, dark chestnut-brown; tail long, strongly graduated, deeply forked, barbs reduced in density and length distally, looks ragged and pointed, slightly brighter and more rufescent than back; chin ochre-rufous, throat and underparts greyish, becoming paler on belly, flanks tinged brownish; iris grey to light brown to chestnut; upper mandible black, lower mandible black or grey; tarsus and toes grey to blue-grey. Sexes alike. Juvenile lacks chestnut on chin, has browner flanks and paler belly. **Voice.** No information available.

**Habitat.** *Páramo* grassland; inhabits dense undergrowth in timber-line ecotone, at edge of humid cloudforest, often mixed with grass and ferns; 3050-3300 m, occasionally lower.

**Food and Feeding.** Poorly known. Forages in understorey, singly or in pairs, but single-species flocks of up to 15 reported. Presumed to glean arthropods from foliage and branches.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in North-east Peruvian Cordilleras EBA. Fairly common in appropriate habitat, but linear nature of this, coupled with its tiny range, means that total population is rather small. Burning and grazing of timber-line habitats in Andes have greatly reduced total surface extent of habitat.

**Bibliography.** Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Parker *et al.* (1982), Peters & Griswold (1943), Remsen (2003a), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

## 64. Vilcabamba Thistletail

### *Schizoeaca vilcabambae*

**French:** Synallaxe de Vilcabamba **German:** Rostkehl-Distelschwanz **Spanish:** Piscuiz de Vilcabamba  
**Other common names:** Ayacucho Thistletail (*ayacuchensis*)

**Taxonomy.** *Schizoeaca vilcabambae* Vaurie *et al.*, 1972, Cordillera Vilcabamba, 3190 m, Cuzco, Peru.

Forms a superspecies with other members of genus, as a series of non-overlapping mountain-top replacements, and all sometimes considered conspecific; their vocalizations seem fairly close, but plumage patterns differ to an extent not found within species-level taxa in the Furnariidae. Distinctive race *ayacuchensis* may merit full species rank; difference in plumage between it and nominate as great as that between *S. helleri* and *S. harterti*. Two subspecies currently recognized.

**Subspecies and Distribution**

*S. v. ayacuchensis* Vaurie *et al.*, 1972 - Andes of S Peru (N Ayacucho).

*S. v. vilcabambae* Vaurie *et al.*, 1972 - Vilcabamba Mts, in S Peru.



**Descriptive notes.** 18-19 cm; 18-19 g. Typical thistletail. Nominative race has ill-defined supercilium behind eye slightly paler than brownish face; crown and upperparts dull dark greyish-brown, crown feathers with slightly darker centres giving faintly spotted appearance; wings like back, edged rufous; tail long, strongly graduated, deeply forked, barbs reduced in density and length distally, looks ragged and pointed, paler and more rufescent than back; chin light ochraceous, throat and underparts greyish, many feathers with darker centres giving faintly scaled appearance, flanks tinged brownish; iris brown to greyish-brown; tarsus and toes grey. Sexes alike.

Juvenile undescribed. Race *ayacuchensis* has blacker face, greatly reduced supercilium, much darker, chestnut chin, slightly darker and more uniform underparts. **Voice.** Undescribed.

**Habitat.** *Páramo* grassland, elfin forest and *Polylepis* woodland; dense undergrowth in timber-line ecotone, and edge of humid cloudforest, often mixed with grass and ferns; 2830-3600 m, rarely down to 2500 m.

**Food and Feeding.** Little known. Feeds solitarily or in pairs in understorey; probably gleans arthropods from foliage and branches.

**Breeding.** No information.

**Movements.** Presumably resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in North-east Peruvian Cordilleras EBA. Fairly common in appropriate habitat. Because of its tiny range and the linear nature of its habitat, total population is likely to be rather small.

**Bibliography.** Alonso *et al.* (2001), Anon. (2003e), Fjeldså & Krabbe (1990), Remsen (2003a), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vaurie *et al.* (1972), Weske (1972).

## 65. Puna Thistletail

### *Schizoeaca helleri*

**French:** Synallaxe de Heller **German:** Punadistelschwanz **Spanish:** Piscuiz de la Puna  
**Other common names:** Heller's Thistletail

**Taxonomy.** *Schizoeaca helleri* Chapman, 1923, Cedrobamba, 12,000 feet [c. 3660 m], Cuzco, Peru. Forms a superspecies with other members of genus, as a series of non-overlapping mountain-top replacements, and all sometimes considered conspecific; their vocalizations seem fairly close, but plumage patterns differ to an extent not found within species-level taxa in the Furnariidae. Birds from S Puno (Peru), with darker plumage and probably significantly smaller body size, appear to represent an undescribed taxon. Monotypic.

**Distribution.** Andes of S Peru (Cuzco, Puno) and N Bolivia (extreme N La Paz).



**Descriptive notes.** 17-18 cm; 13-16 g. Typical thistletail. Has vague greyish supercilium behind eye, brownish-grey face; crown dark rufescent brown, forehead greyer and faintly mottled; upperparts, including wings, dull dark rufescent brown; tail long, strongly graduated and deeply forked, barbs reduced in density and length distally, giving ragged and pointed appearance, paler and more rufescent than back; back and tail darker, less reddish, in Puno (Peru); chin light ochraceous, bordered below by dark greyish upper throat with paler shaft streaks; underparts greyish, tinged brownish on flanks and undertail-coverts (breast slightly darker in

Puno); iris brownish-grey to pale tan; upper mandible black to grey, lower mandible grey to whitish with blackish tip; tarsus and toes grey to blue-grey. Distinguished from very similar *S. harterti* by slightly darker upperparts, slightly brighter underparts, greyer face. Sexes alike. Juvenile undescribed.

**Voice.** Song a series of sputtering notes, increasing in volume and then fading at end, "pee-pee-p-p-t-t-t-t", 1.5-2 seconds long; call an emphatic "peent" or "feet", very similar to that of *S. griseomurina*.

**Habitat.** *Páramo* grassland and elfin forest; inhabits dense undergrowth in timber-line ecotone, at humid cloudforest edge, often mixed with grass and ferns; 2800-3600 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs. Gleans prey from foliage and branches in understorey.

**Breeding.** No information. Presumably monogamous.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Bolivian and Peruvian Upper Yungas EBA. Uncommon to fairly common. Total population rather small, as appropriate habitat is linear in nature. Occurs in Machu Picchu Historical Sanctuary, in Peru. Burning and grazing of timber-line habitats in Andes have severely reduced the extent of suitable areas for occupation by this species.

**Bibliography.** Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Parker & O'Neill (1980), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Walker (2001).

## 66. Black-throated Thistletail

### *Schizoeaca harterti*

**French:** Synallaxe à gorge noire **German:** Schwarzkehl-Distelschwanz **Spanish:** Piscuiz Gorginegro  
**Other common names:** Hartert's Thistletail

**Taxonomy.** *Schizoeaca harterti* Berlepsch, 1901, Unduavi (Hichuloma), La Paz, Bolivia.

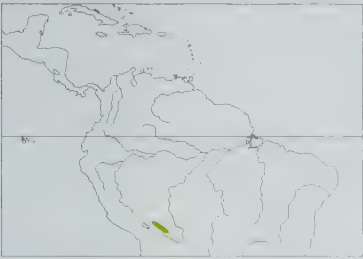
Forms a superspecies with other members of genus, as a series of non-overlapping mountain-top replacements, and all sometimes considered conspecific; their vocalizations seem fairly close, but plumage patterns differ to an extent not found within species-level taxa in the Furnariidae. Two subspecies recognized.

**Subspecies and Distribution**

*S. h. harterti* Berlepsch, 1901 - Andes of N Bolivia (La Paz).

*S. h. hejarianoi* Remsen, 1981 - Andes of C Bolivia (Cochabamba).





to grey. Differs from very similar *S. helleri* in slightly paler upperparts, slightly duller underparts, browner face. Sexes alike. Juvenile undescribed. Race *bejaranoi* is more ochraceous, particularly on auriculars, malar region and neck side, paler and more ochraceous forehead, usually paler, less blackish loreal area, paler grey underparts with ochraceous sides and flanks. VOICE. Song a series of emphatic squeaky notes, accelerating and then slowing, descending slightly at end, lasts 1-1.5 seconds; rodent-like "pseea" as alarm.

**Habitat.** *Páramo* grassland and elfin forest; dense undergrowth in timber-line ecotone, and edge of humid cloudforest, often mixed with grass and ferns; 2900-3400 m.

**Food and Feeding.** Mostly arthropods. Of 19 stomachs examined, all contained arthropod remains and two also contained a few seeds 1-2 mm in diameter. Forages singly or in pairs, mostly in understorey, but in bush-tops at forest edge; mean foraging height in La Paz was 1.4 m above ground and 1.9 m below top of canopy. Gleans arthropods from foliage, mainly upper surfaces of green leaves, and small branches, occasionally from mosses, grasses and rocks.

**Breeding.** Nestlings in Jan. Presumably monogamous. One nest described, an oval mass 20 x 15 cm, mainly of moss and some twigs, side entrance, chamber lined with wet moss, placed on top of clump of grass next to a shrub. Clutch probably 2 eggs; both sexes feed nestlings.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Bolivian and Peruvian Upper Yungas EBA. Fairly common to common. Linear nature of range means that total population is rather small. Burning and grazing of timber-line habitats has greatly reduced the extent of appropriate habitat for this species.

**Bibliography.** Cory & Hellmayr (1925), Ejlsd & Krabbe (1990), Kessler & Herzog (1998), Remsen (1981, 1985, 2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vuilleumier (1969).

Genus *OREOPHYLAX* Hellmayr, 1925

67. Itatiaia Spinetail

*Oreophylax moreirae*

**French:** Synallaxe de l'Itatiaia **German:** Blasser Distelschwanz **Spanish:** Piscuiz de Itatiaia  
**Other common names:** Itatiaia/Brazilian Thistletail, Brazilian Spinetail

**Taxonomy.** *Synallaxis moreirae* Miranda-Ribeiro, 1906, Monte Redondo and Retiro de Ramas, Serra do Itatiaia, Rio de Janeiro, Brazil.

Relationships uncertain; retained in monotypic genus pending further research. Included within genus *Schizoeaca* by some authors, and has similar morphology and plumage, as well as nest; differs morphologically, however, most notably in length and shape of rectrices (webs broader, barbs not quite so reduced distally, tail less forked) and slightly thinner bill; also, *Schizoeaca*, with its narrow elevational and ecological distribution in high Andes, would seem unlikely to have a member (or even a close relative) in SE Brazil. Others consider voice and general behaviour to be more like those of more widely distributed *Asthenes*, which does, moreover, have a representative in SE Brazil. Monotypic.

**Distribution.** Mountains of SE Brazil: Serra do Caraça, Serra do Itatiaia, Serra do Caparaó and Serra dos Órgãos (Minas Gerais, NE São Paulo, Rio de Janeiro, S Espírito Santo).



also described as descending "dew-dee-dee-dee-déééééééééé"; high-pitched "psee, trtrtr, berrrit" also given.

**Habitat.** Semi-humid/humid montane scrub; thickets of bamboo (*Chusquea pinifolia*), overgrown clearings, and tall grass near scrub; generally above timber-line, 1850-2800 m.

**Food and Feeding.** Arthropods; fruits (drupes of *Rapanea*) also occasionally eaten. Usually forages in pairs, or in groups of three, at low levels. Gleans prey items from foliage and branches, often with acrobatic manoeuvres.

**Breeding.** Presumably monogamous. Nest an oval mass of moss, some twigs incorporated around outside, entrance hole high near top and slightly to one side. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Atlantic Forest Mountains EBA. Uncommon to locally fairly common, but range is very small. Common in Itatiaia National Park and reasonably common in Serra dos Órgãos National Park; common on the highest peaks of Serra do Caraça. Burning of timber-line ecotone vegetation a major threat.

**Descriptive notes.** 17-18 cm; 12-14 g. Typical thistletail. Nominative race has vague light brown supercilium behind eye, rufous-brown face; crown and upperparts, including wings and tail, dark rufescent brown, slightly redder on forehead; tail long, strongly graduated, deeply forked, barbs reduced in density and length distally, appears ragged and pointed; chin greyish-white, throat black with whitish shaft streaks, underparts brownish-grey, browner on flanks and undertail-coverts; iris light brown to brown; upper mandible blackish to dark grey, lower mandible grey to pinkish-grey with dark tip; tarsus and toes blue-grey

**Bibliography.** Anon. (2003c), Cordeiro (2001), Cory & Hellmayr (1925), Ferreira de Vasconcelos & Melo-Júnior (2001), Holt (1928), Melo-Júnior *et al.* (1997, 1998), Parker & Goerck (1997), Pineschi (1990), Pinto (1978), Ridgely & Tudor (1994), dos Santos (2000), Scott & Brooke (1985), Sick (1970, 1985d, 1993, 1997), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Willis & Oniki (1993).

Genus *SCHOENIOPHYLAX* Ridgway, 1909

68. Chotoy Spinetail

*Schoeniophylax phryganophilus*

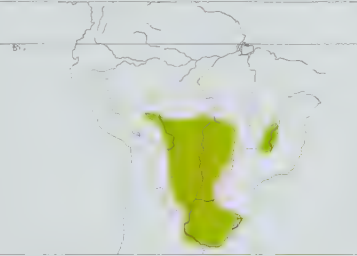
**French:** Synallaxe damier **German:** Weißwangen-Dickichtschlüpfer **Spanish:** Pijui Chotoy

**Taxonomy.** *Sylvia phryganophila* Vieillot, 1817, Paraguay. Similarities in general morphology and nest structure have led some authors to place this species in *Synallaxis*, but it differs strongly from all members of that genus in voice and plumage pattern. Isolated race *petersi* evidently differs only in being smaller, but this requires re-evaluation with modern techniques of analysis. Two subspecies recognized.

**Subspecies and Distribution.**

*S. p. phryganophilus* (Vieillot, 1817) - E Bolivia (Beni, Santa Cruz, Tarija), S Brazil (Mato Grosso do Sul, S Rio Grande do Sul), Paraguay (except extreme E), NE Argentina (S to Santiago del Estero, Santa Fe and N Buenos Aires) and Uruguay.

*S. p. petersi* Pinto, 1949 - E Brazil (N Minas Gerais, W Bahia).



**Descriptive notes.** 20-21 cm; 15-22 g. Large spinetail with distinctive throat pattern unlike that of any other furnariid. Has white supercilium becoming duller posteriorly, light brown auriculars faintly streaked; forehead dark brown, blending to chestnut crown with inconspicuous dark brown streaks, brown hindcrown with faint dark brown streaks; back sandy brown with conspicuous darker brown streaks, lower back to undertail-coverts light brown; wings mostly light brown, conspicuous chestnut shoulder; tail long, strongly graduated, light brown, shafts blackish; chin and upper throat bright yellow, sharply defined black

square in centre of lower throat, bordered laterally by white; upper breast apricot, blending to buffy white lower breast and whitish belly, ill-defined dull buff or brownish-buff sides and flanks, undertail-coverts more rufescent; iris red to brown (source of variation unknown); upper mandible blackish to dark grey, lower mandible grey to bluish, sometimes dark tip; tarsus and toes light grey to brownish. Sexes alike. Juvenile has brown crown, less sharply defined streaking on upperparts, whitish chin, indistinct black throat patch, broader and rounder-tipped rectrices. Race *petersi* is like nominate but smaller. Voice. Song a distinctive series of low-pitched "cho" notes (sounding as if made by a larger bird), accelerating towards end.

**Habitat.** Riparian thickets and second-growth scrub; open areas with scattered trees and shrubs, edges of marshes, gallery woodland, *monte* woodland. From near sea-level to 500 m.

**Food and Feeding.** Arthropods; reported items are Coleoptera. Forages singly or in pairs. Gleans items from foliage and small branches, usually within 1 m of ground.

**Breeding.** Season during austral spring-summer; nests from late Sept, eggs in Oct-Jan and nestlings in Nov-Jan in Argentina. Presumably monogamous. Nest-building seems to occur throughout year; nest a large ball c. 25-60 cm in diameter, of sticks, often or usually thorny ones, horizontal or upward-slanting side entrance tube 25-60 cm long, sometimes curved, and lined with soft plant material, inner chamber sometimes (perhaps often) with oval cup 10-19 cm in diameter made from soft plant fibres or cotton and some green leaves or rootlets; placed 0.7-3.5 m, rarely to 17 m, above ground in bush or small tree or, perhaps especially, in palm, often isolated, sometimes on top of old nest; chamber in communal nest of Monk Parakeets (*Myiopsitta monachus*) occasionally used. Clutch 4-5 eggs, rarely 3 or 6; incubation period c. 15-16 days; nestling period 13-14 days. Nests regularly parasitized by Striped Cuckoo (*Tapera naevia*).

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common in most of its range. Seems to be fairly adaptable, occurring in secondary habitats and scrub.

**Bibliography.** Anon. (2003d), Aramburú (1990), Brooks (1997), Canevari *et al.* (1991), Chebez *et al.* (1999), Contreras (1979d), Cory & Hellmayr (1925), Cuervo (1985), Hayes (1995), Mason (1985), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Naumburg (1930), Navas & Bö (1988), de la Peña (1987, 1988, 1995), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Short (1975), Sick (1993, 1997), Smyth (1928), Stotz *et al.* (1996), Wetmore (1926), Willis (1992b), Willis & Oniki (1990, 1991), Zotta (1940).

Genus *SYNALLAXIS* Vieillot, 1818

69. Rufous-capped Spinetail

*Synallaxis ruficapilla*

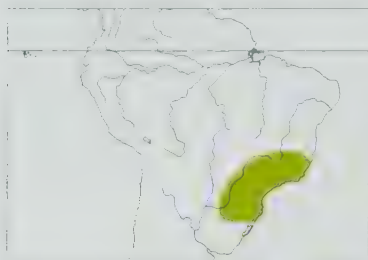
**French:** Synallaxe à calotte rousse **Spanish:** Pijui Coronirrojo  
**German:** Rotkappen-Dickichtschlüpfer

**Taxonomy.** *Synallaxis ruficapilla* Vieillot, 1819, near Rio de Janeiro, Brazil.

Forms a superspecies with *S. cinerea* and *S. infusca*, this superspecies suggested by some authors as being most closely related to *S. frontalis*, *S. azarae* and *S. coursini* on basis of plumage and vocal similarities. Formerly considered to include *S. infusca* as a race, but vocal differences indicate that latter merits rank of full species. Monotypic.



**Distribution.** SE Brazil (S Goiás, S Minas Gerais and Espírito Santo S to N Rio Grande do Sul), E Paraguay (Canendiyu, Alto Paraná, Itapúa) and NE Argentina (Misiones, Corrientes).



**Descriptive notes.** 13-17 cm; 12-16 g. Typical *Synallaxis* with contrasting crown and wings. Has broad buff supercilium contrasting strongly with dark brownish-grey lores and auriculars; crown and hindneck bright orange-rufous, forehead slightly paler, sharply contrasting with rufescent brown back and uppertail-coverts; wings mostly chestnut-brown; tail strongly graduated, 8 rectrices, pointed, distal 1 cm somewhat disintegrated, chestnut; tiny chin spot tawny, rest of chin and throat whitish with indistinct grey streaking; upper breast greyish, blending to paler buffy brownish on breast, belly, sides and flanks, palest in centre of belly; iris reddish-brown; upper mandible black, lower mandible grey with dark tip; tarsus and toes greenish-grey. Differs from very similar *S. cinerea* mainly in browner, less grey, underparts, Sexes alike. Juvenile has much duller crown, weakly defined throat patch, underparts variably washed ochraceous or brownish. **Voice.** Song a fast nasal "di-di-di-réé", number of "di" notes variable, often repeated for long periods, often between pair-members; scold a distinctive low-pitched trill, "tshrrr".

**Habitat.** Montane evergreen forest, tropical lowland evergreen forest, secondary forest; inhabits forest undergrowth and edge, and second-growth woodland, usually in *Chusquea* bamboo thickets and perhaps restricted to them in many areas; more of a true forest species than are most congeners. From near sea-level to 1400 m.

**Food and Feeding.** Little known; food presumably arthropods. Usually seen in pairs, often in mixed-species flocks. Forages mainly in understorey, occasionally in mid-storey and down to ground. Prey presumably gleaned from foliage and small branches, mainly within 1-2 m of ground.

**Breeding.** Season during austral spring-summer. Presumably monogamous. Nest 25-40 cm long, a mass of sticks (some up to 15 cm long), usually thorny, total weight up to 4.2 kg, side entrance tube, or entrance hole on top, tunnel leading downwards to nest-chamber; placed 1-2.5 m above ground among interlocking branches in dense vegetation. Clutch 2-3 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to common. Relatively poorly known species. Occurs in Itatiaia and Serra dos Órgãos National Parks, Serra do Mar State Park, and Augusto Ruschi Biological Reserve, in Brazil; also in Iguazú National Park and Uruguá-i Provincial Park, in Argentina.

**Bibliography.** Aleixo (1997), Aleixo & Galetti (1997), dos Anjos & Boçon (1999), dos Anjos *et al.* (1997), Anon. (2000d, 2003d), Avanzo & Sanfilippo (2000), Belton (1984), Brooks *et al.* (1993), Cândido (2000), Canevari *et al.* (1991), Chebez *et al.* (1999), Contreras (1979d, 1980d), Cordeiro (2001), Cory & Hellmayr (1925), Ferreira de Vasconcelos & Melo-Júnior (2001), Fraga & Narosky (1985), Goerck (1999a), Hayes (1995), Hayes & Scharf (1995a), Madroño, Robbins & Zyskowski (1997), Marini, Motta-Júnior *et al.* (1997), Mazar Barnett & Pearnan (2001), Melo-Júnior *et al.* (2001), Narosky *et al.* (1983), Navas & Bö (1988), Olrog (1963a), Pacheco & Gonzaga (1995), Parker & Goerck (1997), de la Peña (1988), Pinto (1950, 1978), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993, 1997), Silveira (1998), Simon, Pacheco & Silva (1999), Stotz *et al.* (1996).

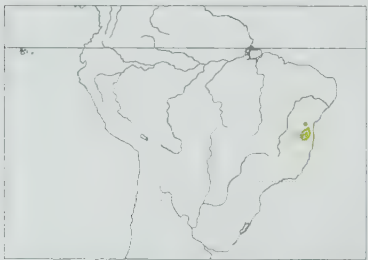
## 70. Bahia Spinetail

### *Synallaxis cinerea*

**French:** Synallaxe du Bahia **German:** Bahiadickichtschlüpfer **Spanish:** Pijui de Bahía

**Taxonomy.** *Synallaxis cinereus* Wied, 1831, "Capitao Filisberto road," southern Bahia, Brazil. Scientific name was long considered a junior synonym of *S. ruficapilla*, but recently shown to represent a separate species; *S. whitneyi* is a synonym. Forms a superspecies with *S. ruficapilla* and *S. infusata*; this superspecies is suggested by some authors as being most closely related to *S. frontalis*, *S. azarae* and *S. courseni* on basis of plumage and vocal similarities. Monotypic.

**Distribution.** E Brazil (S Bahia, NE Minas Gerais).



**Descriptive notes.** 15-17 cm; 16-21 g. Has broad cinnamon-buff supercilium contrasting with brownish-grey lores and auriculars; crown and hindneck bright orange-rufous, forehead slightly paler, contrasting rufescent brown back and uppertail-coverts; wings mostly chestnut-brown; tail strongly graduated, 8 rectrices, pointed, distal 1 cm somewhat disintegrated, chestnut; tiny chin spot tawny, rest of chin and throat whitish-grey with indistinct grey streaking, underparts dark greyish; iris reddish-brown to dark brown; bill dark grey, sometimes paler grey base; tarsus and toes olivaceous to dark grey. Distinguished from very similar *S. ruficapilla* mainly by dark greyish, rather than light brown, underparts. Sexes alike. Juvenile undescribed. **Voice.** Song a double-noted "di-réé, di-réé", constantly repeated by members of pair; scold a spitting trill, similar in quality to that of *S. ruficapilla* but shorter; contact call a sharp, loud note, like first note of scold.

**Habitat.** Montane evergreen forest; in undergrowth of humid forest, especially dense areas of vines, ferns and bamboo near edge; 500-1000 m.

**Food and Feeding.** Arthropods. Three stomachs contained two species of flat-bug (Aradidae), three species of ant, five of Coleoptera (including Aedeagidae larvae, and Curculionidae), oothecae of orthopterans, and a small millipede (Diplopoda). Usually forages in pairs. Prey obtained by gleaning and probing dead leaves, stems and small branches, mostly within 1-2 m of ground, occasionally almost on ground and as high as 5 m up.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** **ENDANGERED.** Restricted-range species: present in Atlantic Forest Mountains EBA. Fairly common to common, but declining as a result of habitat destruction. Known only from fragments of the vanishing humid Atlantic Forest of the mountains of S and interior Bahia (Serra de Ouricana, Serra das Lontras/Javi, Serra Bonita, Chapada Diamantina), and NE Minas Gerais (near Almenara). Total population estimated at 1000-2499 individuals. Most of the remaining habitat fragments are subjected to degradation by cattle grazing and colonization projects; population in Minas Gerais is threatened by a land-reform colonization project. Present in Chapada Diamantina National Park, but this park is not adequately protected.

**Bibliography.** Cordeiro (2001), Gonzaga & Pacheco (1995), Gonzaga *et al.* (1995), Pacheco & Gonzaga (1995), Parrini *et al.* (1999), Ribon *et al.* (2002), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Whitney & Pacheco (2001).

## 71. Pinto's Spinetail

### *Synallaxis infusata*

**French:** Synallaxe de Pinto **German:** Dunkelbauch-Dickichtschlüpfer **Spanish:** Pijui de Pinto  
**Other common names:** Plain/Alagoas/Pernambuco Spinetail

**Taxonomy.** *Synallaxis ruficapilla infusata* Pinto, 1950, Usina Nossa Senhora do Carmo, Vitória de Santa Antão, eastern Pernambuco, Brazil.

Forms a superspecies with *S. ruficapilla* and *S. cinerea*, this superspecies suggested by some authors as being most closely related to *S. frontalis*, *S. azarae* and *S. courseni* on basis of plumage and vocal similarities. Was previously considered a race of *S. ruficapilla*, but vocal differences indicate that it merits rank of full species. Some authors have proposed that it is more closely related to *S. brachyura* or *S. hypospodia*. Monotypic.

**Distribution.** NE Brazil (E Alagoas, E Pernambuco).



**Descriptive notes.** 16-18 cm; 16-20 g. Has reddish-chestnut forehead and crown, brownish-grey back, extensively rufous wings; tail strongly graduated, 10 rectrices stiff with sharply pointed tips, distal 1 cm somewhat disintegrated, dark rufous-chestnut; black chin spot, throat diffusely streaked grey and whitish; underparts uniform dark slaty grey, sometimes paler in centre of belly; iris dark brownish; bill dark grey; tarsus and toes greyish or greenish-grey. Distinguished from similar *S. ruficapilla* by darker and greyer back, more intensely rufous upperwing-coverts and tail, darker and more uniform greyish underparts, supercilium much reduced or absent. Sexes alike. Juvenile undescribed. **Voice.** Song "reet, reet", similar in quality to those of *S. ruficapilla* and *S. cinerea*, repeated 1-3 times (typically twice); scold a spitting trill, virtually identical to that of *S. cinerea*; also gives trill lasting about 1 minute, unlike any vocalization of congeners.

**Habitat.** Tropical lowland evergreen forest; woodland edge, scrubby forest, early second growth, commonly in dense undergrowth; to 500 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs. Gleans prey items from foliage, dead leaves and small branches, within 1-2 m of ground.

**Breeding.** Nest sited on tangle of branches or in fork of tree, amongst bromeliads, usually well covered by lianas; usually 1-5 m up, exceptionally 7 m up or on ground. Nest is a voluminous globular structure 25-30 cm wide, c. 40 cm deep, made of dry sticks, dry leaves, bits of bark and some snake skins; lateral tunnel-like entrance 25-35 cm long; nesting chamber 10-12 cm wide, lined with green grass matted together with cobwebs; some leaves added to outside during incubation; overall weight of 9 nests 500-1200 g; nest-building takes 20-40 days, up to 60 days. Old nest sometimes refurbished, or material used for new one; new nests may be built near old ones year after year. Clutch 2 eggs; incubation 21-22 days; nestlings have sparse grey down; fed insects at intervals of 5-20 minutes (at 7 days old); nestling period 14-16 days. Both adults share duties of nest-building, incubation, feeding young and removing faecal sacs.

**Movements.** Resident.

**Status and Conservation.** **CRITICAL.** Restricted-range species: present in Atlantic Slope of Alagoas and Pernambuco EBA. Uncommon to fairly common, but has tiny range of less than 80 km<sup>2</sup>; in Alagoas, fairly common in forest clearings and at edges of dense forest. Total population estimated at 1000-2500 individuals; declining as a result of rapid deforestation in the region. Present in Pedra Talhada State Park, Salto do Biological Reserve, and Serra dos Cavalos UFPE Ecological Station. **Bibliography.** Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cordeiro (2001), Goerck (2002), Olmos (1993), Oren (1991), Pacheco & Gonzaga (1995), Pinto (1950, 1954a, 1978), Ridgely & Tudor (1994), Sick (1985c, 1993, 1997), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Studer (2003), Teixeira *et al.* (1987), Wege & Long (1995).

## 72. Grey-bellied Spinetail

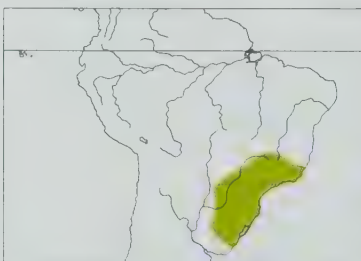
### *Synallaxis cinerascens*

**French:** Synallaxe grisín **German:** Graubauch-Dickichtschlüpfer **Spanish:** Pijui Ceniciento

**Taxonomy.** *Synallaxis cinerascens* Temminck, 1823, Ypanema, São Paulo, Brazil.

No close relatives have been proposed. Monotypic.

**Distribution.** SE Brazil (S from S Goiás, S Minas Gerais and S Espírito Santo), E Paraguay (E from Paraguari), NE Argentina (Misiones, E Corrientes) and N Uruguay.



**Descriptive notes.** 14-15 cm; 10-14 g. Has grey-brown face with indistinct pale greyish supraloral spots, blackish lores, hint of grey postocular stripe; forehead dark greyish-brown, blending to dark brownish-olive crown and to richer brown back and uppertail-coverts; wings mostly rich reddish-chestnut; tail graduated, 10 rectrices, these narrowing at tips to virtually nothing but the shaft (thus producing "spiny" appearance), dark chestnut; chin whitish, upper throat mottled black and pale grey, lower throat black, contrasting strongly with brownish-grey breast, becoming greyer and paler in centre of belly and browner on

flanks and undertail-coverts; iris reddish-brown; bill black, often grey base of lower mandible; tarsus and toes greenish-grey. Sexes alike. Juvenile has less distinct throat patch, faintly mottled and slightly paler underparts. **Voice.** Most frequent vocalization a shrill "wheet-beet", "wheet, bu-beeyt" or "seeee, pu-tee", intervals between vocalizations evidently longer than is the case with many of its relatives.

**Habitat.** Tropical lowland evergreen forest and montane evergreen forest; inhabits dense undergrowth of humid forest and tall second growth; not an "edge" species. Occurs up to 1150 m.



**Food and Feeding.** Arthropods; Orthoptera (Tettigoniidae) and Coleoptera recorded as taken. Forages usually in pairs, from ground to understorey. Prey items gleaned mostly from leaf litter, also from undergrowth vegetation within 1-2 m of ground.

**Breeding.** Season probably during austral spring-summer; nestlings in Nov. Presumably monogamous. Nest is a large mass 0.5-0.6 m in total length, weighing 3.7-3.9 kg, of tightly interwoven sticks mostly 12-22 cm long, some weighing as much as 13 g, external tubular entrance tunnel c. 0.2-0.3 m long, sloping upwards from nest-chamber to an upward-facing entrance hole, area above nest-chamber thatched with bark and leaves, floor with pad of soft, fresh leaves; placed on slightly scraped-out bowl on ground and, if on slope, supported by sticks acting as pillars (unknown if these were placed there by the birds). Clutch 3 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common in most of range. In Brazil, uncommon in Serra da Canastra, Iguaçu and Aparados da Serra National Parks

and rare in Itatiaia National Park; present also in Matas dos Godoy State Park. In Paraguay, uncommon in Caaguazú, Cerro Corá and Ybicui National Parks, and present in San Rafael National Park. Also present in Iguazú National Park and Uruguá-I Provincial Park, in Argentina. Extensive deforestation within this species' relatively small range has dramatically reduced its habitat. Its dependence on forest makes it more vulnerable to deforestation than are many other members of genus.

**Bibliography.** dos Anjos & Boçon (1999), dos Anjos *et al.* (1997), Anon. (2000e, 2003d), Belton (1984), Bornschein & Reinert (1997a), Brooks *et al.* (1993), Canevari *et al.* (1991), Chebez *et al.* (1999), Contreras (1980d), Cory & Hellmayr (1925), Cuello (1985), Ferreira de Vasconcelos & Melo-Júnior (2001), Fraga & Narosky (1985), Goerck (1999a), Hayes (1995), Hayes & Scharf (1995a, 1995b), Madroño, Robbins & Zyskowski (1997), Mazar Barnett & Pearman (2001), Navas & Bó (1988), Olrog (1963a), Parker & Goerck (1997), de la Peña (1988), Pinto (1978), Ridgely & Tudor (1994), Schubart *et al.* (1965), Scott & Brooke (1985), Sick (1993, 1997), Silveira (1998), Simon & Pacheco (1996), Stotz *et al.* (1996), Whitney & Pacheco (1994), Zotta (1938).





PLATE 17

inches 3  
cm 8



## 73. Silvery-throated Spinetail

### *Synallaxis subpudica*

**French:** Synallaxe à gorge argentée

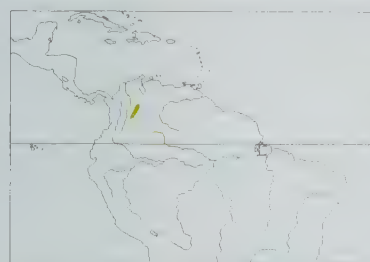
**Spanish:** Pijui de Cundinamarca

**German:** Grauschwanz-Dickichtschlüpfer

**Taxonomy.** *Synallaxis subpudica* P. L. Selater, 1874, "Bogotá".

Thought by some to be possibly related to *S. azarae* and *S. courseni* on account of distribution and superficial plumage similarity, but voice is very different. Vocal similarities have suggested to others that it is closest to the superspecies formed by *S. macconnelli*, *S. moesta* and *S. cabanisi*. Monotypic.

**Distribution.** E Andes of Colombia (N Boyacá, Cundinamarca).



**Descriptive notes.** 17-18 cm. Has greyish-brown face, thin light cinnamon supercilium behind eye; forehead greyish-brown, hind-crown and hindneck rufous-chestnut, back and uppertail-coverts brown; chestnut wing-coverts, slightly paler bases of remiges contrasting with brown distal portions; tail very long, strongly graduated, 10 rectrices, slightly disintegrated towards pointed tips, slightly darker than back; throat grey, some darker feather centres in centre of throat producing faintly mottled appearance, blackish centre of lower throat partly concealed by greyish feather margins; underparts dull olive-tinged greyish-brown, belly paler; iris dark reddish-brown; upper mandible blackish-grey, lower mandible grey; tarsus and toes grey. Sexes alike. Juvenile lacks chestnut on crown. Voice. Song a fast, accelerating, descending and fading series of chattering notes with "laughing" tone, "chi-chi-chi-che-che-chu-chu-chu", evidently often as duet. Call a sharp "kik", sometimes repeated several times; alarm a low trill.

**Habitat.** Montane evergreen forest edge, secondary forest edge, second-growth scrub; dense undergrowth at edge of humid cloudforest, second growth, and regenerating clearings; mainly 2100-3200 m.

**Food and Feeding.** Little known. Usually in pairs; presumably gleans arthropods from foliage and small branches, within 1-2 m of ground.

**Breeding.** Nest a large globular mass of sticks c. 50-60 cm high, 30-40 cm in diameter, side entrance with long tube to nest-chamber, latter lined with moss and twigs, usually placed c. 2 m up in bush. One clutch reported as containing 1 egg. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Colombian East Andes EBA. Fairly common to common within small range. Tolerates fair degree of anthropogenic habitat disturbance, and probably benefits from fragmentation of forest.

**Bibliography.** Cory & Hellmayr (1925), Fjeldsa & Krabbe (1990), Hilty & Brown (1986), Olivares (1969), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

## 74. Sooty-fronted Spinetail

### *Synallaxis frontalis*

**French:** Synallaxe à front sombre

**Spanish:** Pijui Frentigris

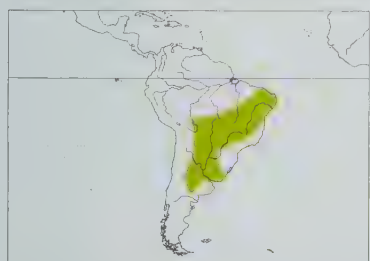
**German:** Graustirn-Dickichtschlüpfer

**Other common names:** Pelzel's Spinetail; Grey-browed Spinetail ("S. *poliophrys*")

**Taxonomy.** *Synallaxis frontalis* Pelzel, 1859, Rio São Francisco, Bahia, Brazil.

Considered by some authors to form a superspecies with *S. azarae* and *S. courseni* on basis of plumage and vocal similarities. Proposed taxon *S. poliophrys* was based on a misidentified specimen of present species. Plumage varies clinally, being brightest in NE and duller in SW; traditionally recognized race *fuscipennis*, described from Bolivia, almost certainly based on this subtle clinal variation, as none of its alleged characters (broader and greyer frontal band, duller back, brown inner webs of central rectrices) allows diagnosis of individual specimens, even when comparing extremes from foothills of Bolivian Andes with distant populations from NE Argentina. Population of R Cotacajes, in Cochabamba (Bolivia), apparently represents an undescribed race. Monotypic.

**Distribution.** E, S & SE Brazil (Maranhão E to Rio Grande do Norte, and S to Mato Grosso do Sul and N São Paulo, also S Rio Grande do Sul), E Bolivia (Cochabamba S to Tarija and Santa Cruz), N Argentina (S to Mendoza, La Pampa and N Buenos Aires), Paraguay (except SE) and Uruguay.



**Descriptive notes.** 14-16 cm; 11-17 g. Has brownish-grey supercilium and face, slightly paler, grizzled loreal area; forehead and forehead dark grey-brown, hindcrown and hindneck dark rufous, back to uppertail-coverts brown with rufescent tinge, wing-coverts dark rufous (upperparts brightest in NE, duller and greyer with wing-coverts browner in SW); remiges paler and tawnier than coverts, with dusky tips; tail long, graduated, rectrices only slightly pointed, dark rufous, inner webs of central pair variably dull rufous to darker fuscous; chin whitish, blending to greyer upper throat, roughly crescent-shaped blackish patch with some pale speckling on lower throat; dull greyish-brown below, paler belly whitish in centre, flanks and undertail-coverts browner; iris chestnut to rufous to yellow (source of variation unknown); upper mandible blackish to dark grey, lower mandible grey to pale grey, sometimes with blackish tip; tarsus and toes olive-grey to greenish-grey. Sexes alike. Juvenile lacks contrasting crown, has underparts somewhat washed ochraceous. Voice. Most frequent vocaliza-

tion a sharp double note described as "ka-kwee-éék", "ka-kweek", "pi-whée" or "ja-coo-éé", often repeated for extended periods; also gives "tsew-klí" or "chi-clí", and repeated nasal "choint" or "choit".

**Habitat.** Tropical deciduous forest, gallery forest edge, secondary forest edge; undergrowth and edge of scrubby or deciduous forest, gallery forest, edge of riparian woodland in arid areas, thornscrub, bushy savanna, and early-successional second growth; also hedgerows in agricultural areas. To 2500 m.

**Food and Feeding.** Little published information. Recorded dietary items include Coleoptera. Usually found in pairs, generally in understorey, occasionally descending to ground. Probably gleans arthropods from foliage and small branches, mainly within 1-2 m of ground.

**Breeding.** Season during austral spring-summer; eggs in Oct-Mar in NW Argentina. Presumably monogamous. Nest a globular mass c. 20-40 cm long, 20 cm wide, 25-30 cm high, made from twigs, often thorny ones, external entrance tube c. 15-30 cm long, inner chamber with bed of dead leaves, twigs, lichens, moss and feathers c. 12 cm in diameter; placed 0.5-4 m (mostly 1-2.5 m) above ground in thorny bush. Clutch 3-4 eggs; incubation period 15-16 days. Nests parasitized by Striped Cuckoo (*Tapera naevia*).

**Movements.** Resident; populations breeding in extreme S suspected of being partially migratory.

**Status and Conservation.** Not globally threatened. Common to fairly common, including in heavily disturbed habitats. Occurs in Serra do Cipó and Chapada dos Guimarães National Parks and Pedra Talhada State Park, in Brazil, and in Calilegua and El Rey National Parks and Costanera Sur Ecological Reserve, in Argentina. Has extended its range into deforested areas.

**Bibliography.** Belton (1984), Canevari *et al.* (1991), Chebez *et al.* (1999), Chesser (1994), Cory & Hellmayr (1925), Cuello (1985), Di Giacomo & López (1998), Ferreira de Vasconcelos & Melo-Júnior (2001), Fjeldsa & Krabbe (1990), Fjeldsa & Maljer (1996), Guerrero & Arambiza (2001), Hayes (1995), Hayes & Scharf (1995b), Herzog *et al.* (1999), Hoy (1968b), Kirwan *et al.* (2001), Krabbe *et al.* (1996), Kratter *et al.* (1993), Lowen, Bartrina, Clay & Tobias (1996), Maceda *et al.* (1997), Marini (2001), Mazar Barnett & Pearnan (2001), Melo-Júnior *et al.* (2001), Narosky *et al.* (1983), do Nascimento *et al.* (2000), Naumburg (1930), Navas & Bö (1988), Norez *et al.* (1983), Ochoa (1971), Olrog (1963a), Parker, Gentry *et al.* (1993), Parrini *et al.* (1999), Partridge (1953), de la Peña (1987, 1988, 1996, 1997), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Salvador (1988, 1990), Schmitt *et al.* (1997), Short (1975), Sick (1993, 1997), Silveira (1998), Stotz *et al.* (1996), Vaurie (1971d), Wetmore (1926), Zotta (1938).

## 75. Azara's Spinetail

### *Synallaxis azarae*

**French:** Synallaxe d'Azara

**German:** Azaradickichtschlüpfer

**Spanish:** Pijui de Azara

**Other common names:** Buff-browed Spinetail (*superciliosa* with *samaipatae*); Elegant Spinetail (*elegantior* with *media*, *ochracea* and *fruticicola*)

**Taxonomy.** *Synallaxis Azarae* d'Orbigny, 1835, Carcuata, Yungas, Cochabamba, Bolivia.

Considered by some authors to form a superspecies with *S. frontalis* and *S. courseni* on basis of plumage and vocal similarities. C Peruvian populations may be closer genetically to latter than they are to geographically distant populations of present species, constitution of which would thereby be rendered paraphyletic. Races *superciliosa* and *samaipatae* formerly treated as representing a separate species, but voice and evidence of introgression suggest that they are better considered conspecific. Races *elegantior* and *ochracea* possibly indistinguishable from each other but separated geographically by *media*; all three, together with *fruticicola*, sometimes treated as forming a separate species, originally on basis mainly of vocal differences (not confirmed subsequently) and difference in number of rectrices. Proposed race *carabayae*, described from S Peru (Puno) and N Bolivia (La Paz), purportedly darker than nominate, but individual specimens of the two forms found to be indistinguishable. Nine subspecies recognized.

**Subspecies and Distribution.**

*S. a. elegantior* P. L. Selater, 1856 - E Andes of Colombia and W Venezuela (Trujillo and SE Lara S to Tachira).

*S. a. media* Chapman, 1914 - W & C Andes of Colombia S to Ecuador (S to Cotopaxi in W and to Zamora-Chinchipe in E), possibly also in N Peru (extreme NE Cajamarca).

*S. a. ochracea* J. T. Zimmer, 1936 - Andes of SW Ecuador (S from Guayas and S Chimborazo) and NW Peru (Tumbes S to Lambayeque).

*S. a. fruticicola* Taczanowski, 1880 - Marañón Valley in N Peru (Cajamarca S to La Libertad).

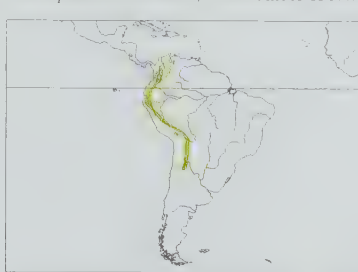
*S. a. infumata* J. T. Zimmer, 1925 - Andes of N & C Peru (Amazonas S to Junin).

*S. a. urubambae* J. T. Zimmer, 1935 - S Peru (Cuzco).

*S. a. azarae* d'Orbigny, 1835 - S Peru (Puno) S to C Bolivia (La Paz S to NW Santa Cruz).

*S. a. samaipatae* Bond & Meyer de Schauensee, 1941 - S Bolivian Andes (C Santa Cruz S to Tarija).

*S. a. superciliosa* Cabanis, 1883 - Andes of NW Argentina (Jujuy S to Catamarca).



**Descriptive notes.** 15-17 cm; 12-18 g. Nominate race has dark brownish-grey face, slightly paler supercilium; forehead and forehead dark greyish-brown, hindcrown and hindneck dark rufous, back to uppertail-coverts rich olive-brown; wings mainly rufous-chestnut except for dark brownish tips of remiges; tail long, graduated, 8 rectrices, these disintegrated towards tips and somewhat pointed, dull chestnut-brown; chin and borders of throat pale greyish with darker feather tips, triangular central throat patch sooty-black with pale grey feather margins; breast dark brownish-grey, belly paler and greyer with faint mottling, flanks and undertail-coverts browner; iris reddish-brown to chestnut; upper mandible black to dark grey, lower mandible grey or blue-grey, sometimes with blackish base or tip; tarsus and toes olive-grey to greyish-green. Sexes alike. Juvenile has crown and back brown, throat patch indistinct, underparts washed pale brown to ochraceous, mainly on breast, with some darker brown edgings. Races vary in "leap-frog" manner, with alternating series of "pale" and "dark" populations: *elegantior* is paler than nominate, with buffy or greyish supercilium poorly defined,



white loreal spot, more fulvous flanks, usually 10 rectrices, juvenile underparts more strongly washed ochraceous; *media* is like previous, but supercilium grey and even less contrasting, loreal spot smaller, chest greyer, flanks paler and more olivaceous; *ochracea* is pale, has crown and wing-coverts paler, back more buffy brown, narrower frontal band, very pale grey below, flanks tinged ochraceous; *fruticicola* is slightly darker than previous, frontal band broader; *infumata* is darker throughout than last, has 8 rectrices, most similar to nominate but grey frontal band wider, wing-coverts brighter shade of rufous; *urubambae* differs from last in having darker tail tinged olivaceous grey (especially basally), rufous margins of remiges duller and contrasting with brighter wing-coverts; *samaipatae* is relatively pale, has forehead feathers indistinctly edged rufous, thin supercilium buffish, face and breast medium grey (intermediate in several ways between nominate and next); *supercilliosa* has more prominent pale buff supercilium, light buffy brown underparts with whitish belly. **VOICE.** Most frequent vocalization a sharp "ket-kwééék" or "pip-squeak" c. 1 second long, second note occasionally repeated, given at intervals of 1-4 seconds. Also gives series of scratchy, nasal "prrrt" notes, sometimes interspersed with "kweek-kweek" notes; alarm a low short "chur" or "trrrt".

**Habitat.** Montane evergreen forest edge, secondary forest; dense undergrowth at edge of humid cloudforest and elfin forest, second growth, bamboo thickets, regenerating clearings and landslides, overgrown pastures, bushy roadsides; also riparian thickets in drier areas. Occurs in deciduous and semi-deciduous forest in Argentina (*supercilliosa*). Mainly 1500-3500 m, but down to 900 m in SW Ecuador; mainly 600-1600 m in S Bolivia and Argentina.

**Food and Feeding.** Mostly arthropods, including moth larvae; some small seeds also recorded in diet. Usually in pairs, occasionally also in mixed-species flocks. Gleans prey from foliage, small branches and occasionally dead leaves, usually within 1-2 m of ground but at times as much as 6 m above it.

**Breeding.** Breeds during both wet and dry months and possibly throughout year in W Colombia; eggs in Feb-Apr in Colombia and Ecuador and Oct-Nov in NW Argentina; fledglings in May-Sept in Colombia S to N Peru. Monogamous. Nest a bulky elongated mass of sticks with horizontal or upward-inclined entrance tube 30-40 cm long, densely thatched above interior chamber, which lined with soft plant material and, occasionally, some snake skin; placed in low, dense vegetation. Clutch 2 eggs, but up to 4 in Argentina (*supercilliosa*). Nests frequently usurped by Bay-winged Cowbird (*Agelaioides badius*) in Argentina.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common over most of its extensive range. Occurs in numerous protected areas. Tolerates moderate anthropogenic disturbance; presumably benefits from forest fragmentation.

**Bibliography.** Bond (1945), Canevari *et al.* (1991), Chapman (1926), Cook (1996), Cory & Hellmayr (1925), Field & Krabbe (1990), Fjeldså & Maijer (1996), Friedmann (1927), Herzog *et al.* (1999), Hilty (1985, 2003a), Hilty & Brown (1983, 1986), Koepecke (1961a), Krabbe *et al.* (1996), Miller (1960, 1963), Narosky *et al.* (1983), Norez & Yzurieta (1983a), Norez *et al.* (2000), Olrog (1963a), Parker, Parker & Plenge (1982), Parker, Schulenberg, Graves & Braun (1985), Parker, Schulenberg, Kessler & Wust (1995), Peña (1997), de la Peña (1988), Remsen (1985, 2003a), Remsen & T aylor (1989), Remsen *et al.* (1988), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salaman (1994), Salaman *et al.* (1999), Salvador (1988), Schulenberg & Awbrey (1997a), Stotz *et al.* (1996), Taczanowski (1884), Vaurie & Schwartz (1972), Walker (2001), Zimmer (1930, 1935b, 1936b).

## 76. Apurimac Spinetail

### *Synallaxis courseni*

**French:** Synallaxe de Coursen

**Spanish:** Pijui de Apurimac

**German:** Langschwanz-Dickichtschlüpfer

**Other common names:** Blake's/Coursen's Spinetail

**Taxonomy.** *Synallaxis courseni* Blake, 1971, Bosque Ampay (Abancay), 9000 feet [c. 2750 m], Apurimac, Peru.

Considered by some authors to form a superspecies with *S. frontalis* and *S. azarae* on basis of plumage and vocal similarities. Biogeography, habitat and voice strongly suggest that it is a derivative of latter. Proposal by others that this species is related to *S. brachyura* considered a very unlikely one. Monotypic.

**Distribution.** C Peruvian Andes on S slopes of Nevada Ampay, N of Abancay (Apurimac).



**Descriptive notes.** 17-18 cm; 15 g. Has dark grey forehead and face slightly tinged brownish, paler supercilium behind eye; hindcrown and hindneck dark rufous, back to uppertail-coverts dark grey with slight olive tinge; wings mostly bright orange-rufous except for dark brownish tips of remiges; tail very long, graduated, 10 rectrices, outer pairs disintegrated towards tips and somewhat pointed, dark sooty-brown, shafts of outer pairs of rectrices with dull rufous tones; throat patch sooty-black with pale grey feather margins; underparts rather uniform dark grey, flanks washed olive; iris chestnut; upper mandible black, lower

mandible blue-grey with black tip; tarsus and toes greenish-grey. Distinguished from similar *S. azarae* by much longer and darker tail with 10, not 8, rectrices, generally greyer appearance. Sexes alike. Juvenile has crown and back brown, throat patch indistinct, underparts washed pale brown to ochraceous. **VOICE.** Most frequent vocalization a sharp "ka-kwééék", often repeated, indistinguishable from that of *S. azarae*, and responds strongly to playback of latter.

**Habitat.** Dense undergrowth at edge of semi-humid forest (*Podocarpus hermsianus*), second growth, regenerating clearings and landslides, especially in bamboo thickets; 2450-3500 m.

**Food and Feeding.** Arthropods. Forages usually in pairs, in understorey. Gleans items from foliage and small branches in undergrowth, occasionally up to 3 m above ground.

**Breeding.** Virtually nothing known. Birds with large gonads in Dec; immatures seen in Mar.

**Movements.** Resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Peruvian High Andes EBA. Common to rare in appropriate habitat, but has tiny range of only 36 km<sup>2</sup>. Total population estimated at 300-400 pairs in 1990s. Entire range is officially protected, constituting the Ampay National Sanctuary. No data available on population trends.

**Bibliography.** Blake (1971), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Fjeldså (1987), Fjeldså & Krabbe (1986, 1990), Mayr & Vuilleumier (1983), Parker *et al.* (1982), Remsen (2003a), Remsen *et al.* (1988), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wege & Long (1995).

## 77. Pale-breasted Spinetail

### *Synallaxis albesceus*

**French:** Synallaxe albane **German:** Weißbauch-Dickichtschlüpfer **Spanish:** Pijui Pechiblanco  
**Other common names:** White-throated Spinetail, Pale-breasted Castlebuilder

**Taxonomy.** *Synallaxis albesceus* Temminck, 1823, Cemiterio do Lambari, near Sorocaba, São Paulo, Brazil.

Close relationship to *S. albigularis* and *S. spixi* suggested by plumage and vocal similarities. Considered by some authors to be possibly the sister-species of former, which was once regarded as conspecific; proposed race *pullata* is a synonym of nominate race of that species. Reported vocal differences of race *australis* suggest that it may be a separate species. Geographical variation tends to follow Gloger's Rule, with populations from arid areas usually the palest in coloration; some of the described variation, however, probably due to individual and age variation in small sample sizes, and many of the races tentatively recognized (especially those in N South America) are likely to be synonymized once a quantitative analysis of geographical variation is conducted. Proposed race *hypoleuca* (C Panama), described as paler below, is considered by most authors to be synonymous with *latitabunda*. Race *nesiotis* originally described (from Margarita I, off N Venezuela) as like nominate but paler, but, with its distribution expanded to include large areas of mainland, its distinguishing characters are unclear; proposed race *trinitatis* (Trinidad and N Venezuela) said to have darker crown and wing-coverts and more buff-brown back than that race, but these characters not corroborated by subsequent authors. Proposed race *griseonota*, from confluence of R Tapajós and R Amazon (Brazil), described as having paler crown and wing-coverts and more greyish underparts than *inaequalis*, but, since latter recorded from both E and W of that area, its acceptance as a valid taxon requires corroboration. Ten subspecies tentatively recognized.

**Subspecies and Distribution.**

*S. a. latitabunda* Bangs, 1907 - SW Costa Rica, Panama and NW Colombia.

*S. a. littoralis* Todd, 1948 - coast of N Colombia.

*S. a. insignis* J. T. Zimmer, 1935 - N & C Colombia (Cauca and Magdalena Valleys, and Boyacá) and W Venezuela (S Apure).

*S. a. perpallida* Todd, 1916 - extreme N Colombia (Guajira Peninsula) and NW Venezuela (NW Zulia E to W Falcón, S to N shore of L Maracaibo and Lara).

*S. a. occipitalis* Madarász, 1903 - NW Venezuela (Perijá Mts, Mérida, Táchira) and NC Colombia (Norte de Santander, Santander), evidently in montane areas.

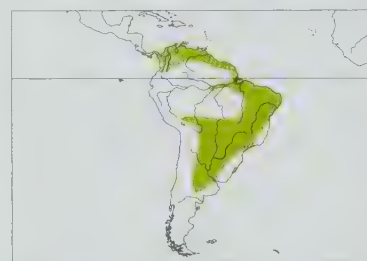
*S. a. nesiotis* A. H. Clark, 1902 - N Colombia (Santa Marta region) and N Venezuela (S Táchira and Apure E to Sucre, Monagas, extreme N Amazonas and N Bolívar, also Margarita I and Cubagua I); also Trinidad, including Bocas Is.

*S. a. josephinae* Chubb, 1919 - S Venezuela (C Amazonas, C Bolívar, Guyana, Surinam and N Brazil (Roraima).

*S. a. inaequalis* J. T. Zimmer, 1935 - French Guiana and NC Brazil (both sides of R Amazon between R Madeira and R Tapajós).

*S. a. australis* J. T. Zimmer, 1935 - extreme SE Peru (Madre de Dios), E Bolivia (Beni S to Tarija and Santa Cruz), W Paraguay, NW & C Argentina (Salta and Formosa S to Mendoza, La Pampa and Buenos Aires).

*S. a. albesceus* Temminck, 1823 - S & E Brazil, E Paraguay and NE Argentina (Misiones).



**Descriptive notes.** 13-16 cm; 9-17 g. Typical *Synallaxis* but slightly smaller and shorter-billed than most. Nominative race has pale brownish-grey face with weakly defined pale eyeline; forehead dull olive greyish-brown, blending to dark rufous crown, crown often slightly mottled and weakly defined (source of variation unknown); upperparts dull olive-brown; rufous wing-coverts contrasting with tawny-brownish remiges; tail long, graduated, 10 rectrices, these somewhat pointed (but blunter than on many congeners), olive-brown, outer rectrices variably tinged somewhat more rufescent; throat whitish, irregular black fleck-

ing in centre of lower throat; breast pale buffy grey, blending to paler belly, browner flanks and undertail-coverts; iris yellowish to light brown or brown (source of variation unknown); upper mandible black to dark grey, lower mandible blackish to grey with dark tip or uniform grey; tarsus and toes yellowish-brown to greyish-olive or brownish-yellow. Sexes alike. Juvenile lacks contrasting crown, has upperparts paler and often slightly more rufescent (especially wing-coverts) than adult, throat patch less distinct, underparts paler, almost white on throat and centre of belly. Race *latitabunda* is darker than nominate, tail and flanks browner; *perpallida* is generally like previous but less rufescent, more greyish, above, crown and wing-coverts darker rufous and more extensive, very white below; *occipitalis* is darker throughout, with blackish, not greyish, forehead; *insignis* resembles last but general colour paler, rufous of crown less extensive, thus greyish of forehead more extensive, back paler with brownish tinge, upperwing-coverts paler, malar region paler grey, breast paler and less greyish; *littoralis* differs from previous in more brownish, less greyish, upperparts, on average underparts with less greyish wash; *nesiotis* has paler, more yellowish-tinged crown and shoulder area than nominate, paler and greyer upperparts, whiter below, paler undertail-coverts, creamy (not buff) underwing-coverts, but possibly variable; *josephinae* is like last but darker overall, face darker grey, back less buff-brown, breast more greyish, flanks darker brownish; *inaequalis* is much paler than previous, rufous of cap and wing-coverts paler, back with greyish tinge, throat and belly whiter, breast pale grey or whitish, flanks greyish with little buff; *australis* resembles nominate but rufous crown feathers tipped olive, back duller, more greyish-brown, outer margins of wing-coverts with rufous usually restricted to bases, throat feathers with broader whitish tips. **VOICE.** Most frequent vocalization a buzzy, nasal "wée-byew", "wake-up", or (*latitabunda*) "wa-ter", often repeated for long periods, e.g. up to 30 minutes at 35-40 songs per minute; also two-parted "brri-drr, wi-deh"; described as shriller and higher-pitched "whii-whzesu" in SW of range (*australis*); voice of *nesiotis* slightly more variable on Margarita I than on Venezuelan mainland. Call described (from Costa Rica) as sharp "bip", often repeated rapidly and followed by long rattling "churrur".

**Habitat.** *Cerrado*, campo grasslands, pastures/agricultural lands, second-growth scrub; variety of open areas as long as extensive grass present: grassland, savanna, regenerating pasture, shrub-steppe, brush in open woodland, marsh edges, second growth and overgrown roadsides. Mostly below 1500 m.

**Food and Feeding.** Recorded food items are orthopterans, including grasshoppers (Acrididae), also stick-insects (Phasmidae). Coleoptera (including the families Curculionidae, Chrysomelidae), Hemiptera, Homoptera, ants (Myrmicinae), caterpillars, spiders, and a small snail. Usually forages



in pairs, rarely in mixed-species flocks. Gleans prey items from foliage, grass and small branches, usually within 1-2 m of ground; also from ground.

**Breeding.** Breeds in Dec-Sept in Trinidad and during austral spring-summer in Argentina; eggs in May-Jul in Costa Rica, May in Panama, Jan-Feb and May-Oct in Surinam and Nov-Feb in Argentina; nestlings in Feb in Argentina. Presumably monogamous. Nest a globular mass c. 15-20 cm tall and 18-30 cm long, of dried grasses and twigs, latter up to 18 cm long and sometimes thorny, often snake skin and sometimes spider webs incorporated, straight horizontal entrance tube (sometimes two tubes) c. 15-40 cm long, inner chamber c. 10 cm in diameter, covered by thatch of coarse plant material, lined with soft plant material such as pubescent *Solanum* leaves or seed down; placed 0.6-2 m above ground, rarely to 9 m, usually in large clump of bunch-grass or bush overgrown with vines, once on top of old nest of mockingbird (*Mimus*). Clutch 2-4 eggs; incubation by both sexes, period c. 15-18 days; nestling period c. 16 days. Nests regularly parasitized by Striped Cuckoo (*Tapera naevia*).

**Movements.** Presumably resident; populations breeding in extreme S of range suspected of being at least partially migratory.

**Status and Conservation.** Not globally threatened. Fairly common to common over most of its large range; local or scarce in some regions, e.g. Santa Catarina (SE Brazil). Tolerant of moderate anthropogenic disturbance, provided that adequate areas of tall grass remain. Expanding its range in areas that have been cleared.

**Bibliography.** Alves & Cavalcanti (1996), Belcher & Smoother (1936), Bond (1956), Braze & Hornbuckle (1998), Braze *et al.* (1997), Brooks *et al.* (1993), Canevari *et al.* (1991), Chapman (1931), Chesser (1994), Clark (1902), Cory & Hellmayr (1925), Ferreira de Vasconcelos & Melo-Júnior (2001), French (1991), Fjeldså & Maijer (1996), Fraga & Narosky (1985), Guerrero & Arambiza (2001), Haverschmidt & Mees (1994), Hayes (1995), Hilty (2003a), Hilty & Brown (1986), Lindell (1998), Melo-Júnior *et al.* (2001), Meyer de Schauensee (1945), Miller (1955), Morton (1979), Naka *et al.* (2001), Narosky *et al.* (1983), Navas & Bö (1988), Norez *et al.* (1983), Olrog (1963a), Parker (1982), Parker & Bailey (1991), Parker, Gentry *et al.* (1993), Parker, Parker & Plenge (1982), Parrini *et al.* (1999), de la Peña (1987, 1988), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Wynne (1989), Ridgely & Tudor (1994), Ripley (1955), Rodner *et al.* (2000), Salaman (1994), Salvador (1988), Schubart *et al.* (1965), Selater & Salvin (1879), Serié & Smyth (1923), Short (1975), Sick (1993, 1997), da Silva *et al.* (1997), Skutch (1969c, 1985, 1987), Slud (1964), Smyth (1928), Snyder (1966), Stiles & Skutch (1989), Stotz *et al.* (1996), Todd (1948b), Tostain *et al.* (1992), Wetmore (1926, 1972), Zimmer, J.L. (1935b, 1936b), Zimmer, K.J. & Hilty (1997), Zotta (1936).

## 78. Dark-breasted Spinetail

*Synallaxis albigularis*

**French:** Synallaxe à gorge blanche

**Spanish:** Pijui Pechioscuro

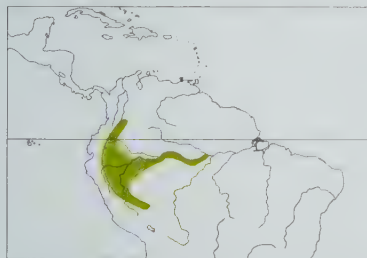
**German:** Dunkelbrust-Dickichtschlüpfer

**Taxonomy.** *Synallaxis albigularis* P. L. Selater, 1858, Rio Napo, Ecuador.

Close relationship to *S. albescens* and *S. spixi* suggested by plumage and vocal similarities. Considered by some authors to be possibly the sister-species of former, and was once regarded as conspecific; proposed race *pullata* of that species is a synonym of nominate race of present species. Larger birds with much darker underparts, found in Huallaga and Ucayali drainages of Peru, appear to represent an undescribed race. Two subspecies recognized.

### Subspecies and Distribution.

*S. a. rodolphei* Bond, 1956 - S Colombia (Meta S to Putumayo) and NE Ecuador (Sucumbfos, N Napo). *S. a. albigularis* P. L. Selater, 1858 - E Ecuador (S from S Napo), SE Colombia (extreme S Amazonas), E Peru (Amazonas S to Madre de Dios) and W Brazil (E, mainly along R Amazon, to R Negro).



**Descriptive notes.** 15-16 cm; 14-18 g. Typical *Synallaxis* with contrasting crown and wings, dark throat patch. Nominative race has dark brownish-grey forecrown, supercilium and face; hindcrown and hindneck dark rufous, back to uppertail-coverts olive-brown; dark rufous shoulder with duller paler edges to greater wing-coverts; remiges dark brownish; tail long, graduated, 10 rectrices rather pointed, dull brown; throat greyish-white with irregular sooty flecks, feathers of central lower throat blackish with pale grey margins; breast and sides dull brownish-grey, blending to paler belly (nearly white in centre), browner flanks and undertail-coverts;

iris reddish-brown to brown or pale brown (source of variation unknown); upper mandible black to dark grey, lower mandible greyish to blue-grey; tarsus and toes greenish-grey to greenish-yellow. Sexes alike. Juvenile lacks contrasting crown, has paler upperparts than adult, throat patch less distinct and paler, underparts mostly uniform dark ochraceous. Race *rodolphei* is darker, especially below, whitish centre of belly contrasts more with rest of underparts, back also slightly darker. Voice. Most frequent vocalization a hurried "chéép, du-du-du" or "whit, di-di-di", often repeated for long periods; occasionally gives short chatter while perched in relatively exposed place.

**Habitat.** River-island scrub and second-growth scrub; middle-aged and young river islands with *Gynerium* cane, tall grass, and low shrubs (especially *Tessaria*), also overgrown grassy clearings, plantations. From sea-level to 1500 m, locally to 2100 m.

**Food and Feeding.** Arthropods. Usually in pairs; gleans items from small branches and foliage within 1-2 m of ground, also from ground itself.

**Breeding.** Eggs in Jun-Jul in Colombia. Presumably monogamous. Nest a mass of sticks c. 40-50 cm long, tubular entrance, placed 1-2 m above ground in dense vegetation. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Common within somewhat limited range. Occurs in a number of protected areas, including Cuyabeno Reserve, in Ecuador, and Manu National Park and Biosphere Reserve, in Peru. Present in many areas of high anthropogenic disturbance. Is expanding its range into deforested areas.

**Bibliography.** Balchin & Toyne (1998), Bond (1956), Chapman (1931), Cherrie (1916b), Cory & Hellmayr (1925), Foster *et al.* (1994), Hilty & Brown (1986), Parker *et al.* (1982), Pinto (1978), Remsen (2003a), Remsen & Parker (1983), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1995, 1997), Rosenberg, G.H. (1990), Sick (1993, 1997), Stotz *et al.* (1996), Terborgh & Weske (1969), Zimmer (1936b).

## 79. Spix's Spinetail

*Synallaxis spixi*

**French:** Synallaxe de Spix

**German:** Spixdickichtschlüpfer

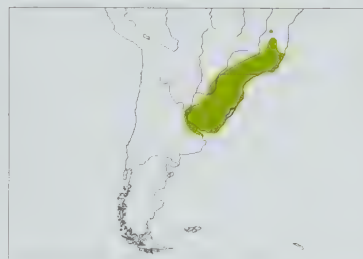
**Spanish:** Pijui Plomizo

**Other common names:** Chicli Spinetail

**Taxonomy.** *Synallaxis Spixi* P. L. Selater, 1856, São Paulo, Brazil.

Close relationship to *S. albescens* and *S. albigularis* suggested by plumage and vocal similarities. In the past was considered conspecific with *S. hypospodia*; the two are thought to be possibly sister-species by some authors, but others consider them not closely related because of differences in tail morphology, throat pattern and voice. Monotypic.

**Distribution.** E Paraguay, SE Brazil (S from SE Bahia and S Espírito Santo), NE Argentina (S to E Santa Fe, Entre Ríos and N Buenos Aires) and Uruguay.



**Descriptive notes.** 16-17 cm; 12-14 g. Typical *Synallaxis* with contrasting crown and wings, dark throat patch. Face is dark greyish-brown with paler eyeline; forehead to hindneck rufous, upperparts dark brown; rufous lesser wing-coverts, dark brown median and greater coverts with broad rufous margins, dark brown remiges; tail long, graduated, 10 rectrices, central pair highly disintegrated towards tips and sharply pointed, dark brown; throat greyish-white, most of lower throat black with feathers edged greyish; breast-brownish grey, blending to paler belly, browner flanks and undertail-coverts; iris reddish to orange-brown; upper mandible black, lower mandible grey; tarsus and toes greenish-grey to greyish-olive. Sexes alike. Juvenile lacks contrasting crown colour, has upperparts slightly darker than adult, throat patch less distinct, underparts mostly ochraceous brown, lower mandible pinkish. Voice. Most frequent vocalization a hurried "whit, di-di-di" or "swéet, bee-bee-bee-bee", often repeated quickly for long periods.

**Habitat.** Second-growth scrub, riparian thickets and *cerrado*; open areas, usually with mix of tall grass and shrubs, and woodland edge, often near water. From near sea-level to 2050 m.

**Food and Feeding.** Little known. Usually in pairs, mainly in understorey, occasionally on ground. Presumably gleans arthropods from foliage and small branches within 2 m of ground.

**Breeding.** Season during austral spring-summer; eggs in Nov-Jan in Argentina. Presumably monogamous. Nest a globular or cylindrical mass c. 20-30 cm long, 25-30 cm high, made from sticks, usually thorny, often with snake or lizard skins (and occasionally wire) incorporated, lateral entrance tube c. 25 cm long, inner chamber with particularly dense "roof" of branches and bark that evidently provides additional protection from rain, and with lining c. 12-15 cm across of leaves (sometimes of *Solanum*), mosses and hair; placed 1-2 m up in bush or small tree. Clutch 3-5 eggs. Nests regularly parasitized by Striped Cuckoo (*Tapera naevia*).

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common over much of its range; rare in extreme S. Occurs in several protected areas. Presumably benefits from deforestation.

**Bibliography.** Aleixo & Galetti (1997), dos Anjos & Boçon (1999), dos Anjos *et al.* (1997), Anon. (2003d), Belton (1984), Brooks *et al.* (1993), Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Cuello (1985), Di Giacomo (1995), Euler (1900), Ferreira de Vasconcelos & Melo-Júnior (2001), Fraga & Narosky (1985), Goerck (1999a), Hayes (1995), Madroño, Clay *et al.* (1997), Madroño, Robbins & Zyskowski (1997), Mazar Barnett & Pearman (2001), Melo-Júnior *et al.* (2001), Naka *et al.* (2002), Narosky *et al.* (1983), Navas & Bö (1988), Parker & Goerck (1997), Parrini *et al.* (1999), de la Peña (1987, 1988, 1997), Pereyra (1927), Pinto (1978), Ridgely & Tudor (1994), Scott & Brooke (1985), Serié & Smyth (1923), Sick (1993, 1997), Silveira (1998), Stotz *et al.* (1996), Wetmore (1926).

## 80. Cinereous-breasted Spinetail

*Synallaxis hypospodia*

**French:** Synallaxe cendré

**German:** Graubrust-Dickichtschlüpfer

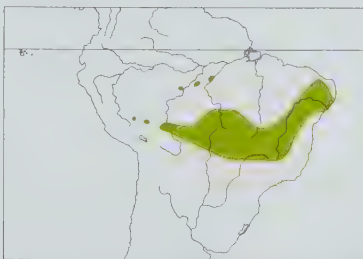
**Spanish:** Pijui Cenizo

**Other common names:** Jaragua Spinetail ("Jaraguana")

**Taxonomy.** *Synallaxis hypospodia* P. L. Selater, 1874, near Bahia, Brazil.

Was in the past considered a subspecies of *S. spixi*; the two are thought to be possibly sister-species by some authors, but others consider them not closely related because of differences in tail morphology, throat pattern and voice. Named taxon *jaraguana* from E Brazil (Goiás), described as a race of *S. brachyura*, was based on misidentified specimens of present species. Monotypic.

**Distribution.** SE Peru (Cuzco, Madre de Dios), N & E Bolivia (NW La Paz, Beni, N Santa Cruz) and SC & E Brazil (locally in S Amazonia from Amazonas E to R Tapajós, and Mato Grosso E to Ceará, Alagoas, N Bahia and W Minas Gerais).



**Descriptive notes.** 15-16 cm; 15-18 g. Typical *Synallaxis* with contrasting crown and wings, dark throat patch. Has dark grey-brown forecrown, grey-brown face with hint of grey supercilium; rest of crown and hindneck chestnut-rufous, back to uppertail-coverts dark brown; chestnut-rufous wing-coverts, dark brown remiges edged rufescent; tail long, graduated, 10 rectrices rather broad and rounded (far less pointed than in most congeners), darker than back; chin and throat whitish, bases of feathers black, lower throat mainly black with narrow whitish edges; breast brownish-grey, belly whitish, flanks and undertail-

coverts brownish; iris reddish-brown; upper mandible black, lower mandible silvery grey to greyish horn; tarsus and toes olive or greyish-olive to brownish-yellow. Sexes alike. Juvenile lacks contrasting crown colour, has throat patch less distinct, underparts mostly ochraceous clay-brown. Voice. Most frequent vocalization a hurried and loud chatter on same pitch, "chéw, chew-chee-chee-chee-ee-ee-ee-ee-eu", accelerating at end, described by some as similar in quality to that of *S. albigularis*.

**Habitat.** Low, seasonally wet grassland, and second-growth scrub; in open areas with mix of low shrubs and grass, often near water, and including *campinas* and savanna. Recorded up to 700 m.

**Food and Feeding.** Little known. Usually seen in pairs. Presumably gleans arthropods from foliage and small branches within 1-2 m of ground.

**Breeding.** No information.

**Movements.** Resident.



**Status and Conservation.** Not globally threatened. Locally common to fairly common; relatively poorly known. Somewhat fragmented distribution, with isolated populations in S Peru; specimens reported from N & C Peru (San Martín, Junín) probably misidentified.

**Bibliography.** Brace & Hornbuckle (1998), Cory & Hellmayr (1925), Parker *et al.* (1982), Pinto (1936, 1978), Remsen (2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Tudor (1994), Sick (1993, 1997), Stotz *et al.* (1996), Straube & Bornschein (1991a), Willis & Oniki (1990), Zimmer (1936b).

## 81. Ruddy Spinetail

### *Synallaxis rutilans*

**French:** Synallaxe ardente **German:** Schwarzkehl-Dickichtschlüpfer **Spanish:** Pijui Rojizo  
**Other common names:** Temminck's Spinetail

**Taxonomy.** *Synallaxis rutilans* Temminck, 1823, Cametá, Rio Tocantins, Brazil.

Almost certainly the sister-species of *S. cherriei*, type specimen of which was once considered an aberrant individual of race *amazonica* of present species. Distinctive race *omissa* suggested as being possibly a separate species. Differentiation and distribution of other races uncertain, and present arrangement tentative; some listed races possibly not distinguishable, while small series of specimens from N Bolivia suggests that darkness of plumage coloration varies clinally from W Amazonia to extreme E Bolivia (near type locality of *tertia*); thorough analysis needed. Seven subspecies recognized.

#### **Subspecies and Distribution.**

*S. r. dissors* J. T. Zimmer, 1935 - E Colombia (Vichada, Guainía), S Venezuela (Amazonas, Bolívar), the Guianas and N Brazil (E of R Negro).

*S. r. caquetensis* Chapman, 1914 - SE Colombia (S from Meta and Vaupés), E Ecuador and NE Peru.

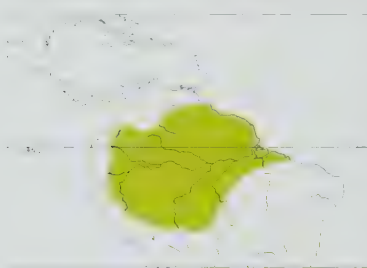
*S. r. confinis* J. T. Zimmer, 1935 - NW Brazil (W of R Negro).

*S. r. amazonica* Hellmayr, 1907 - E Peru, W & C Brazil (S of R Amazon, E to R Tapajós) and N Bolivia (Pando, La Paz, N Beni).

*S. r. rutilans* Temminck, 1823 - EC Brazil from R Tapajós E to R Tocantins, S to NE Mato Grosso.

*S. r. omissa* Hartert, 1901 - R Tocantins E to N Maranhão (E Brazil).

*S. r. tertia* Hellmayr, 1907 - SW Brazil (S to SW Mato Grosso) and E Bolivia (E Santa Cruz).



**Descriptive notes.** 13-14 cm; 15-22 g. Distinctive *Synallaxis* with plumage mostly chestnut and blackish. Male nominate race has forecrown and face deep ruddy chestnut, loreal region mottled blackish; hindcrown to back chestnut with strong olive-brown wash (especially on hindcrown), rump and uppertail-coverts dull dark brown; wing-coverts mostly chestnut, remiges fuscous with dull chestnut margins; tail long, graduated, 10 rectrices moderately pointed, slaty blackish; throat black, breast bright ruddy chestnut like face, belly and undertail-coverts dark olive-brownish, occasionally faint paler shaft streaks.

flanks slightly browner; iris brown to chestnut-red; upper mandible black, lower mandible black, sometimes with grey base, to blue-grey; tarsus and toes olive-grey to dark grey or black (source of variation in bare-part colours unknown, perhaps geographical). Distinguished from similar *S. cherriei* mainly by dark throat. Female is slightly paler than male, and more washed with olive. Juvenile is duller, less rufous, than adult, throat grey, vaguely streaked below, especially on belly. Race *dissors* differs from nominate mainly in slightly less olivaceous back, interscapular area with little or no chestnut patch, browner scapulars with reduced chestnut area; *caquetensis* has crown and back mostly rufous-chestnut, flanks and centre of belly olive-tinged fuscous; *confinis* is generally paler chestnut throughout, lacks traces of olive on nape, has browner outer webs of remiges; *amazonica* has crown and back often suffused with brown, rump and uppertail-coverts sooty blackish; *tertia* differs from previous in having rump and uppertail-coverts brown, instead of sooty blackish; *omissa* is distinctive in having plumage mostly fuliginous, with rufous only on wings, often rufous wash on breast, remarkably similar to juvenile plumages of other races. **Voice.** Most frequent vocalization a nasal "kéé-kawow", "tae, tae-owet", "kit-naaa" or "chick-dawah", often doubled, usually repeated at c. 1-second intervals, sometimes for long periods.

**Habitat.** Tropical lowland evergreen forest; undergrowth of tropical forest (mainly *terra firme*), especially in or around treefall gaps. Usually occupies less disturbed or less open forest than *S. cherriei* where the two occur sympatrically. To 900 m; to 1200 m in S Venezuela.

**Food and Feeding.** Recorded dietary items are Coleoptera (including Curculionidae), shield-bugs (Pentatomidae), cicadas (Cicadidae), cockroaches (Blattodea), ants and other Hymenoptera, caterpillars, Diptera, spiders. Forages usually in pairs, occasionally in mixed-species flocks, on or within 1-2 m of ground. Gleans arthropods from leaf litter, dead-leaf clusters, dense foliage and small branches.

**Breeding.** Nest a globular mass of twigs with long horizontal entrance tunnel. Clutch 3-4 eggs. No other information.

#### **Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common over most of its extensive range. Local in F Ecuador. Occurs in numerous protected areas.

**Bibliography.** Barnett *et al.* (2002), Blake (1950b), Cadena, Alvarez *et al.* (2000), Cory & Hellmayr (1925), Foster *et al.* (1994), Graves & Zusi (1990), Gyldenstolpe (1930a, 1945b), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Meyer de Schauensee (1945), Naumburg (1930), Novaes (1990), Oren & Parker (1997), Parker & Bailey (1991), Parker *et al.* (1982), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Schubart *et al.* (1965), Sick (1993, 1997), da Silva *et al.* (1990), Snyder (1966), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer & Bierregaard (1995), Taczanowski (1884), Terborgh *et al.* (1984), Tostain *et al.* (1992), Whitney & Pacheco (1994), Zimmer, J.T. (1935b, 1936b), Zimmer, K.J. & Hilty (1997), Zimmer, K.J., Parker *et al.* (1997).

## 82. Chestnut-throated Spinetail

### *Synallaxis cherriei*

**French:** Synallaxe à gorge marron **Spanish:** Pijui Gorgicastaño  
**German:** Orangekehl-Dickichtschlüpfer

**Taxonomy.** *Synallaxis cherriei cherriei* Gyldenstolpe, 1930, Barão Melgaco, Rio Gi-Paraná, Mato Grosso, Brazil.

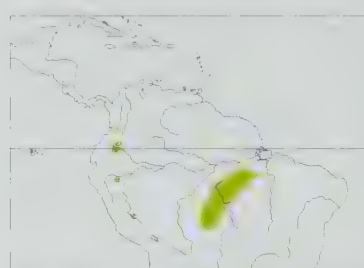
Previously named *S. rufogularis*, but that name is invalid, as preoccupied. Almost certainly the sister-species of *S. rutilans*, and type specimen was at one time considered to be an aberrant individual of race *amazonica* of that species. Race *saturata* often considered synonymous with *napoensis*, but distinguishable from latter by paler overall plumage. Three subspecies recognized.

#### **Subspecies and Distribution.**

*S. c. napoensis* Gyldenstolpe, 1930 - S Colombia (Putumayo) and E Ecuador (W Sucumbios, W Napo).

*S. c. saturata* Carriker, 1934 - N & C Peru (San Martín, Ayacucho).

*S. c. cherriei* Gyldenstolpe, 1930 - C Amazonian Brazil (Rondônia, N Mato Grosso, and S Pará from lower R Xingu E to Serra dos Carajás).



**Descriptive notes.** 13-14 cm; 15-17 g. Male nominate race has forecrown, face and throat to breast deep rufous-chestnut, hindcrown to back chestnut with strong olive-brown wash (especially on hindcrown), rump and uppertail-coverts dark brown; wing-coverts mostly chestnut, remiges dark fuscous; tail long, graduated, 10 moderately pointed rectrices, slaty blackish; belly and undertail-coverts greyish with olive-brown tinge, occasionally faint pale shaft streaks, flanks slightly darker; iris variable, from ivory to grey to dark brown (source of variation unknown); upper mandible black, lower mandible black to greyish; tarsus and toes dusky olive to

dark horn-coloured to brownish-grey. Differs from very similar *S. rutilans* mainly in lack of dark throat patch. Female is slightly paler than male on throat and belly. Juvenile has upperparts darker and more olivaceous, only faint tinges of rufous on forehead, face, neck, wing-covert margins and breast, whitish throat with faint dusky feather tips, feathers of lower breast and belly faintly margined with brown, lower mandible whitish. Race *napoensis* has more restricted, more sharply defined rufous on forehead, paler margins of primaries, darker belly; *saturata* differs from that in being paler overall, browner above, paler and more orange-rufous on throat and breast, paler grey on belly. **Voice.** Most frequent vocalization "prrrr-préet", "trrr tuuit" or "kra-kü", second note slightly lower and shorter than first, repeated for long periods, often ending with second note alone repeated 4-8 times. Calls described as high-pitched "psiu" and whistled "piwwwh".

**Habitat.** Tropical lowland evergreen forest and secondary forest, often in treefall areas or short forest; details not well understood. Where sympatric with *S. rutilans*, usually occupies more disturbed or open forest or *Guadua* bamboo thickets. At 200-1100 m; to c. 1450 m in Peru.

**Food and Feeding.** Recorded dietary items are Coleoptera, Diptera, Lepidoptera larvae, spiders. Usually forages in pairs, mostly within 1-3 m of ground, also on ground. Arthropods obtained by gleaning and probing dead leaves, small branches, and foliage; also flakes and gleans items from leaf litter.

**Breeding.** No information.

#### **Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Rare to occasionally fairly common, but has patchy distribution and everywhere very local; few known localities. Occurs in Cuyabeno Reserve, in Ecuador, and in Cristalino State Park, in Brazil. Colombian and Ecuadorian parts of range have suffered rather extensive deforestation and habitat degradation and fragmentation, mainly through road-building associated with oil exploration, and extensive areas of its habitat in Peru have been cleared for agriculture and logging, with subsequent human colonization. Significant percentage of forest in SC Brazil (Mato Grosso, Rondônia) had already disappeared by early 1990s, mainly because of highway construction.

**Bibliography.** Aleixo *et al.* (2000), Angehr & Aueca (1997), Anon. (2003g), Begazo *et al.* (2001), Bond (1945), Carriker (1934), Collar & Andrew (1988), Collar *et al.* (1992), Cory & Hellmayr (1925), Graves & Zusi (1990), Gyldenstolpe (1930a), Hilty & Brown (1986), Negret (2001), Oren & da Silva (1987), Parker *et al.* (1982), Pinto (1978), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stotz *et al.* (1996), Terborgh & Weske (1969), Wege & Long (1995), Zimmer, J.T. (1936b), Zimmer, K.J., Parker *et al.* (1997).

## 83. Rufous Spinetail

### *Synallaxis unirufa*

**French:** Synallaxe roux **German:** Rötlichbrauner Dickichtschlüpfer **Spanish:** Pijui Rufo

**Taxonomy.** *Synallaxis* [sic] *unirufus* Lafresnaye, 1843, Colombia = "Bogotá".

Forms a superspecies with *S. castanea* and *S. fusciorufa*; all three have sometimes been considered conspecific, but substantial vocal differences documented and reciprocal playback trials reveal pronounced vocal discrimination. Birds in Cajamarca (N Peru), duller and less rufous than any others, apparently represent an undescribed race. Four subspecies recognized.

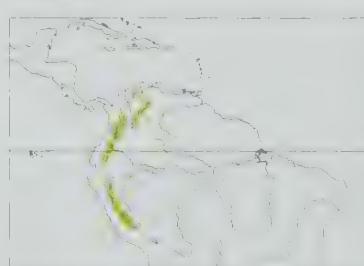
#### **Subspecies and Distribution.**

*S. u. munoztebari* Phelps, Sr. & Phelps, Jr., 1953 - Perijá Mts of NE Colombia and NW Venezuela.

*S. u. meridana* Hartert & Goodson, 1917 - Andes of W Venezuela (Trujillo S to Táchira) and NC Colombia (extreme NW part of E range in Norte de Santander).

*S. u. unirufa* Lafresnaye, 1843 - Andes of Colombia (S possibly from Chocó in W range, from Antioquia in C, and in Cundinamarca and W Casanare in E) and Ecuador (on W slope S only to W Cotopaxi).

*S. u. ochrogaster* J. T. Zimmer, 1935 - Peruvian Andes from Amazonas S to N Cuzco (Cordillera Vilcabamba).



**Descriptive notes.** 16-18 cm; 17-21 g. Relatively large and uniformly brightly coloured *Synallaxis*. Nominative race is almost entirely bright reddish rufous; forehead slightly paler, loreal area sooty blackish, concealed bases of feathers in centre of throat blackish; tail long, graduated, 10 rectrices with shafts slightly stiffened, tips pointed, outer webs slightly disintegrated; iris dark brown to dark reddish-brown; bill black, base of lower mandible sometimes grey to silvery or pale fleshy pink; tarsus and toes grey to dark grey. Sexes alike. Juvenile has brown upperparts, head sometimes tinged olivaceous, underparts paler than adult, darkest on breast. Race *meridana* is paler, black bases of throat feathers more visible, tail slightly longer; *munoztebari* is also paler, no black on throat, faint buff supercilium and forehead; *ochrogaster* is palest of all below, especially in centre of belly. **Voice.** Most frequent vocalization a shrill



“kweeék”, “ku-kweeék” or rising “kwee”, repeated at intervals of 1-4 seconds, often for long periods. Call “jip”; alarm a low “churr”.

**Habitat.** Montane evergreen forest and elfin forest; undergrowth and edge of humid cloudforest, often in *Chusquea* bamboo thickets, sometimes in tall second growth. Mainly 1700-3700 m, locally down to 1200 m.

**Food and Feeding.** Arthropods. Usually in pairs, occasionally in mixed-species flocks. Gleans items from foliage and small branches within 1-2 m of ground, occasionally higher, to 4 m.

**Breeding.** Fledglings in Apr in Colombia. Presumably monogamous. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout range. Occurs in Guaramacal National Park, in Venezuela, Munchique National Park, in Colombia, and Podocarpus National Park, in Ecuador. Rather poorly known spinetail.

**Bibliography.** Cory & Hellmayr (1925), Cuervo & Delgado (2001), Graves (1985), Hilty (2003a), Hilty & Brown (1983, 1986), Meyer de Schauensee (1959), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Phelps & Phelps (1953a), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salaman (1994), Salaman *et al.* (1999), Stotz *et al.* (1996), Vaurie & Schwartz (1972), Zimmer (1935b, 1936b).

84. Black-throated Spinetail

*Synallaxis castanea*

**French:** Synallaxe de Vaurie    **German:** Mirandadickichtschlüpfer    **Spanish:** Pijui Gorginegro  
**Other common names:** Chestnut Spinetail

**Taxonomy.** *Synallaxis castanea* P. L. Selater, 1956, near Caracas, Venezuela.

Forms a superspecies with *S. unirufa* and *S. fusciorufa*; all three have sometimes been considered conspecific, but substantial vocal differences documented and reciprocal playback trials reveal pronounced vocal discrimination. Monotypic.

**Distribution.** Coastal range of N Venezuela from Aragua E to Miranda (E to Caracas area).



**Descriptive notes.** 16-18 cm. Relatively large and uniformly bright *Synallaxis*. Plumage is almost wholly bright rufescent, chin paler, but throat solidly black; tail long, graduated, usually 8 rectrices (sometimes 10), shafts slightly stiffened, tips only slightly pointed; iris dark reddish-brown; bill blackish; tarsus and toes blue-grey. Differs from *S. unirufa* in brighter coloration, black throat, slightly different tail structure (only 8 rectrices, which broader and blunter, and not disintegrated). Sexes alike. Juvenile is more brownish and duller than adult, throat patch dull and indistinct, feathers of head and underparts usually faintly edged dusky.

**VOICE.** Song a rapid “ke-che-che-che-che” followed immediately by louder “ker-chéé-chéé”; often as duet. Call a loud “ki-kik”.

**Habitat.** Montane evergreen forest, secondary forest; undergrowth and edge of cloudforest and second growth; commonly in shrubby thickets at forest edge and along roadsides, and occasionally in *Chusquea* bamboo. At 1300-2200 m.

**Food and Feeding.** Little known. Usually seen in pairs. Presumably gleans arthropods from foliage and small branches within 1-2 m of ground.

**Breeding.** Season Apr-Jul. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Cordillera de la Costa Central EBA. Fairly common, but has very small range. Occurs in Henri Pittier and Macarao National Parks.

**Bibliography.** Cory & Hellmayr (1925), Hilty (2003a), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vaurie & Schwartz (1972).

85. Rusty-headed Spinetail

*Synallaxis fusciorufa*

**French:** Synallaxe des Santa Marta    **Spanish:** Pijui de Santa Marta  
**German:** Rotkopf-Dickichtschlüpfer  
**Other common names:** Santa Marta Spinetail

**Taxonomy.** *Synallaxis fusco-rufa* P. L. Selater, 1982, San Sebastián, 7000 feet [c. 2130 m], Sierra Nevada de Santa Marta, Colombia.

Forms a superspecies with *S. unirufa* and *S. castanea*; all three have sometimes been considered conspecific, but substantial vocal differences documented and reciprocal playback trials reveal pronounced vocal discrimination. Monotypic.

**Distribution.** Santa Marta Mts of N Colombia.



**Descriptive notes.** 16-18 cm; 15-17 g. Plumage is bright reddish rufous, apart from dark loreal area, dull greyish-olive back, olive flanks, concealed blackish bases of throat feathers; tail long, graduated, 10 rectrices with shafts slightly stiffened, tips pointed, outer webs slightly disintegrated, duller rufous; iris reddish-brown; upper mandible black, lower mandible blue-grey; tarsus and toes grey to blue-grey. Differs from *S. unirufa* in back colour, less contrasting loreal area, black bases of throat feathers less extensive, tail duller. Sexes alike. Juvenile has much duller crown, underparts edged tawny-olive, faint barring on belly.

light brown eyes, yellowish-pink lower mandible. **VOICE.** Most frequent vocalization a nasal “dit-du” c. 1 second long, final note descending and lower-pitched, often repeated at intervals of 1-4 seconds for long periods.

**Habitat.** Edge of montane evergreen forest, overgrown clearings and second-growth scrub; mostly 2000-3000 m, locally down to 760 m.

**Food and Feeding.** Arthropods. Forages usually in pairs. Gleans items from foliage and small branches within 1-2 m of ground.

**Breeding.** No information other than birds with large gonads in Jan-Jun.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species; present in Santa Marta Mountains EBA. Fairly common to common, but has very small range. Has suffered extensive habitat loss, and agricultural expansion, logging and burning continue to pose a threat.

**Bibliography.** Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Hilty & Brown (1986), Orejuela (1985), Remsen (2003a), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Todd & Carriker (1922b).



ssp erythrorhox



86



ssp pacifica



87



88



89



90

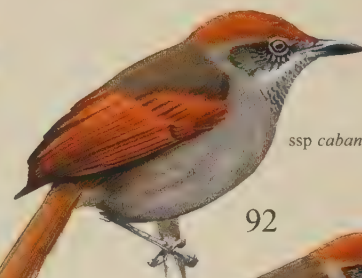


ssp moesta

91



ssp brunneicaudalis



ssp cabanisi

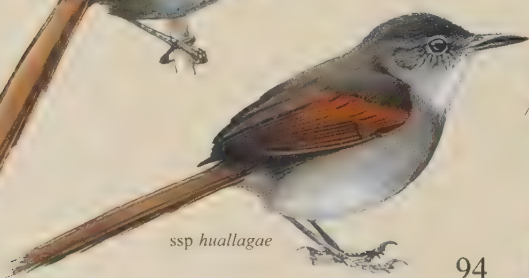
92



ssp fulviventris



93



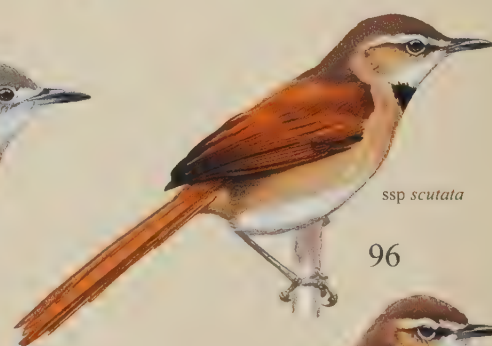
ssp huallagae

94



ssp certhiola

95



ssp scutata

96



ssp gujanensis

ssp venezuelensis

97



ssp candei



ssp atrigularis

98



ssp whittii

PLATE 18

inches 3  
cm 8



## 86. Rufous-breasted Spinetail

### *Synallaxis erythrothorax*

**French:** Synallaxe à poitrine rousse

**Spanish:** Pijui Centroamericano

**German:** Rotbrust-Dickichtschlüpfer

**Other common names:** Rufous-breasted Castlebuilder

**Taxonomy.** *Synallaxis erythrothorax* P. L. Slater, 1855, Honduras.

Probably forms a superspecies with *S. brachyura* and perhaps *S. tithys*; abruptly replaced by former in N Honduras, and their nests are remarkably similar. Some tendency for N birds of nominate race to have darker and more uniform central belly, but extensive overlap with others farther S; proposed race *furtiva*, described from Caribbean lowlands of Mexico, is not diagnosable. Two subspecies recognized.

#### Subspecies and Distribution.

*S. e. erythrothorax* P. L. Slater, 1855 - Caribbean slope from SE Mexico (S Veracruz and Yucatán Peninsula S to N Oaxaca and Tabasco) S to Guatemala, Belize and NW Honduras.

*S. e. pacifica* Griscom, 1930 - Pacific lowlands of SW Mexico (S Chiapas), Guatemala and El Salvador.



**Descriptive notes.** 14-16 cm; 15-19 g. Mid-sized *Synallaxis* with unusual plumage. Nominant race has dark sooty brownish face, uniform dark brownish-grey crown to back, brown rump and uppertail-coverts; wings dark rufous except for dusky tips of remiges; tail long, strongly graduated, 10 rectrices with stiffened shafts, pointed and somewhat disintegrated (possibly only through wear) at tip, distal 1-2 mm almost without barbs and giving "spiny" appearance, same colour as rump; throat blackish, feathers of chin and upper throat with whitish shaft streaks and margins creating vaguely striped appearance; breast and

sides dark rufous, whitish belly mottled greyish, flanks and undertail-coverts rich brown; iris dark red to reddish-brown or brown; bill black to dark grey, sometimes grey base of lower mandible; tarsus and toes grey, blue-grey or dark grey. Sexes alike. Juvenile has throat patch greyish and less distinct, chest dusky brown, iris brown, upper mandible dark brown, lower mandible pale yellowish-brown. Race *pacifica* has lower throat grey, not blackish, belly greyer and more uniform, rufous areas slightly paler, tail brighter, redder. Voice. Song a rapid, rough chatter with 1-3 introductory notes, "chree, ree, reu-reu-reu-reu". Main contact call a nasal "whit-chew", first note usually repeated 2-4 times, also described as "zhee-zhee-zhee-zhoo" with first 3 notes ascending and final one lower and slurred; sharp "cheurr" and nasal "kyow" also given.

**Habitat.** Secondary forest, second-growth scrub, tropical lowland evergreen forest edge; to 750 m.

**Food and Feeding.** Little known. Recorded dietary items are Lepidoptera larvae, spiders, and some fruit. Usually forages in pairs in understorey. Probably gleans arthropods from foliage and small branches within 1-2 m of ground.

**Breeding.** Eggs in May-Jun in Guatemala, Jun and Aug in El Salvador and Aug-Sept in Honduras. Monogamous. Nest a bulky mass c. 40 × 70 cm, of twigs and small sticks, often thorny ones, some up to 43 cm long, horizontal entrance tube 30-40 cm long usually turns upwards at opening (forming short turret), reptile skins prominent, especially on bottom of entrance tube, spherical inner chamber c. 13-15 cm in diameter and roofed with coarse plant material, floor lined with grass, small twigs, or soft or pubescent green leaves (often of *Solanum*) and occasionally snake and lizard skins; placed in dense bush or small tree, often among vines, 1.5-6 m above ground, and supported on main branch by strong lateral or parallel branches. Clutch 2-4 eggs; both sexes incubate, period 17-18 days; both also feed nestlings.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. The only furnariid restricted to N Middle America. Fairly common to common in most of range. May benefit from moderate forest fragmentation, but evidently does not inhabit deforested areas.

**Bibliography.** Anon. (1988a), Binford (1989), Cory & Hellmayr (1925), Dickey & van Rossem (1938), England (2000), Gordon & Ornelas (2000), Howell & Webb (1995a), Lea (1951), Lowery & Dalquest (1951), Monroe (1968), Paynter (1955), Remsen (2003a), Ridgely & Tudor (1994), Russell (1964), Skutch (1969c, 1985, 1987), Stotz *et al.* (1996), Wetmore (1943).

## 87. Slaty Spinetail

### *Synallaxis brachyura*

**French:** Synallaxe ardoisé

**German:** Graurücken-Dickichtschlüpfer

**Spanish:** Pijui Pizarroso

**Other common names:** Grey-throated/Sooty Spinetail, Sooty Castlebuilder

**Taxonomy.** *Synallaxis brachyura* Lafresnaye, 1843, Colombia = "Bogotá".

Probably forms a superspecies with *S. erythrothorax* and perhaps *S. tithys*; abruptly replaces former in N Honduras, and their nests are remarkably similar. Proposed race *chapmani* (S Central America to NW Ecuador) described as like *nigrofumosa* but with rump slightly browner and crown, wings and underparts slightly paler, but variation evidently clinal, and individual specimens not diagnosable. Named taxon *jaraguana* from E Brazil (Goias), described as a race of present species, was based on misidentified specimens of *S. hypospodia*. Four subspecies tentatively recognized.

#### Subspecies and Distribution.

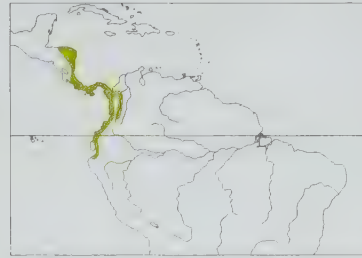
*S. b. nigrofumosa* Lawrence, 1865 - NC Honduras S to Panama and NW Colombia S to NW Ecuador (S to N Guayas).

*S. b. brachyura* Lafresnaye, 1843 - N Colombia (Antioquia E to Magdalena Valley).

*S. b. cauae* Chapman, 1914 - C Colombia (Cauca Valley).

*S. b. griseonucha* Chapman, 1923 - SW Ecuador (S from Guayas and Azuay) S to extreme NW Peru (Tumbes).

**Descriptive notes.** 14-16 cm; 16-21 g. One of the darkest species in genus. Nominant race has deep rufous-chestnut crown and nape, greyish supercilium, darker grey rest of head, dark sooty-brown



olive-grey, grey or blue-grey. Sexes alike. Juvenile lacks contrasting crown colour, has upperparts paler than adult, wing-coverts duller, throat patch less distinct and paler, underparts more olivaceous. Race *nigrofumosa* is darker throughout, crown and wings darker rufous, back darker brown, underparts darker grey; *griseonucha* is slightly paler than previous, especially on underparts; *cauae* has paler crown, greyer back, paler greyish-olive rump and uppertail-coverts. Voice. Song a low "ch-ch-ch-churr-r-r-r", "je-ch-ch-chrrrr" or "chut-chut-chrrrrrrrrrr", slightly descending at end, lasting c. 0.3 seconds, repeated at intervals of 1-2 seconds. Call during foraging "chk"; "chee-ah" also described.

**Habitat.** Second-growth scrub, riparian thickets, and undergrowth at edges of montane evergreen forest and tropical lowland evergreen forest; also overgrown clearings, locally also thorn-scrub, edges of swamps, and gardens. Mainly to 1400 m, locally to 2000 m.

**Food and Feeding.** Dietary items recorded are Coleoptera, Hemiptera, larval Diptera and Lepidoptera, spiders, spider eggs, and seeds. Usually in pairs, foraging from undergrowth down to ground. Gleans arthropods from dead leaves, small branches, foliage, and leaf litter.

**Breeding.** Eggs in Jan-Feb and Apr-Oct in Costa Rica. Monogamous; paired throughout year. Nest a bulky mass c. 20-40 cm high and 40-50 cm long, of twigs and small sticks, often thorny, some as long as 25 cm, reptile skins also regularly incorporated, horizontal entrance tube 30-40 cm long (sometimes two separate tubes), possibly sometimes curved, inner chamber covered by denser thatch, floor lined with pad of soft green or pubescent leaves or fragments (usually of *Solanum*) mixed or bound with spider webbing and occasionally snake and lizard skins; placed in dense bush or small vine-covered tree, usually 0.5-5 m above ground. Clutch 2-3 eggs; incubation by both sexes, period 18-19 days; both also feed chicks, nestling period 17 days; fledglings independent in 30 days.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common in most of range. Occurs in La Planada Nature Reserve and Rio Nambi Natural Reserve, in Colombia. Tolerant of moderate anthropogenic habitat disturbance, and presumably benefits from fragmentation of forest.

**Bibliography.** Anon. (1988a), Chapman (1926), Cook (1996), Cory & Hellmayr (1925), Fjeldsa & Krabbe (1990), Hilty (1997), Hilty & Brown (1986), Howell & Webb (1995a), Kirwan & Marlow (1996), Meyer de Schauensee (1951), Miller (1960), Monroe (1968), Parker & Carr (1992), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1995), Pinto (1936, 1978), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Robbins *et al.* (1985), Rodner *et al.* (2000), Salaman (1994), Sekercioglu *et al.* (2002), Sick (1993, 1997), Skutch (1969c, 1985, 1987), Slud (1960, 1964), Stiles & Skutch (1989), Stotz *et al.* (1996), Todd & Carriker (1922a), Wetmore (1972), Wiedenfeld *et al.* (1985), Young *et al.* (1998).

## 88. Blackish-headed Spinetail

### *Synallaxis tithys*

**French:** Synallaxe tithys

**German:** Schwarzgesicht-Dickichtschlüpfer

**Spanish:** Pijui Cabecinegro

**Other common names:** Black-faced/Taczanowski's Spinetail

**Taxonomy.** *Synallaxis tithys* Taczanowski, 1877, Lechugal, Tumbes, Peru.

May form a superspecies with *S. erythrothorax* and *S. brachyura*. Monotypic.

**Distribution.** SW Ecuador (S from SW Manabí and C Loja) and extreme NW Peru (Tumbes, N Piura).



**Descriptive notes.** 16-17 cm; 14-18 g. The only *Synallaxis* having a black forecrown. Has front of head black, hindcrown and upper back dark grey, blending to dark brownish rump and uppertail-coverts; wing-coverts tawny-rufous, remiges dark fuscous with rufescent brown edging; tail long, graduated, 8 rectrices pointed towards tips, dark fuscous; chin blackish (faint pale shaft streaks conceal black feather bases when viewed head-on), throat black, malar region grizzled with whitish; underparts grey, becoming paler on belly, olive tinge on flanks and undertail-coverts; iris reddish-brown to grey-brown (source of variation unknown); upper mandible black to dark grey, lower mandible blue-grey to grey; tarsus and toes grey or pale grey to bluish-horn. Sexes alike. Juvenile is more olivaceous, less grey, dark frontal band not well defined, underparts often mottled grey. Voice. Song a short, dry trill, "t-t-t-t-tit", c. 1 second long, often repeated every few seconds.

**Habitat.** Tropical deciduous forest; in undergrowth of deciduous forest, second growth, and adjacent scrub; 50-1100 m.

**Food and Feeding.** Recorded dietary items are Coleoptera, Orthoptera and Hymenoptera. Usually in pairs, rarely in mixed-species flocks. Gleans arthropods from ground and leaf litter, also from foliage and small branches, usually within 2 m of ground.

**Breeding.** Presumably breeds during Jan-Apr wet season; laying apparently in Mar, and juvenile trapped in Aug. Presumably monogamous. Nest a ball of sticks c. 30 cm × 30 cm, placed in vine tangles 3-7 m above ground. No further information.



**Movements.** Resident; some suggestion of local elevational movements.

**Status and Conservation.** **ENDANGERED.** Restricted-range species: present in Tumbesian Region EBA. Uncommon to common. In Ecuador, fairly common in Arenillas Military Reserve, uncommon in Machabilla National Park and rare in Cerro Blanco Forest Reserve; present in Loma Alta Ecological Reserve, in SW Ecuador. Common to fairly common in Tumbes National Reserve, in NW Peru. Estimated total population 2500-10,000 individuals; declining as a result of habitat destruction. Population of this species has been greatly reduced by deforestation, and by degradation of remaining deciduous forest through overgrazing and cutting. Surveys required in order to assess its current population, and to determine its ability to survive in heavily degraded habitats. Effective protection of localities where it occurs is essential.

**Bibliography.** Balchin (1996), Becker *et al.* (2000), Best & Clarke (1991), Best, Clarke *et al.* (1993), Best, Heijnen & Williams (1997), Bond (1945), Chapman (1926), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cook (1996), Cory & Hellmayr (1925), Granizo (2002), Lowen (1998), Parker & Carr (1992), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1995), Pople *et al.* (1997), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Taczanowski (1884), Walker (2002), Wege & Long (1995), Wiedenfeld *et al.* (1985).

## 89. White-bellied Spinetail

### *Synallaxis propinqua*

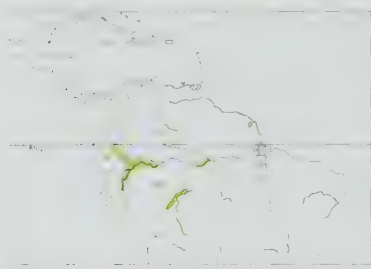
**French:** Synallaxe à ventre blanc

**Spanish:** Pijui Ventriblanco

**German:** Flussinsel-Dickichtschlüpfer

**Taxonomy.** *Synallaxis propinqua* Pelzeln, 1859. Rio Madeira below the junction of the Mahissy (= Rio Igarapé Maici), Rondônia, Brazil. No obvious close relatives, Monotypic.

**Distribution.** French Guiana (R Oyapock), and E Ecuador (lower R Aguarico, R Napo, R Pastaza), NE Peru (R Napo, R Amazon, R Ucayali), extreme SE Colombia (islands in R Amazon), Brazil (locally along R Amazon E to R Tocantins, also on lower R Branco, middle R Juruá, upper R Madeira) and NE Bolivia (lower R Beni).



**Descriptive notes.** 15-16 cm; 18-22 g. Typical *Synallaxis* but with noticeably longer bill. Has almost plain light greyish-brown face with indistinct paler supercilium, dark eyeline; crown and back to uppertail-coverts greyish-brown; wing-coverts rufous, remiges duller; tail long, graduated, 10 rectrices sharply pointed, dull rufous; chin greyish-white, throat black with faint greyish fringes giving frosted look (viewed from certain angles, especially head-on, pale margins nearly obliterate black of throat, whereas from other angles throat appears solidly black); breast dull grey, belly whitish, flanks brownish-grey, to light brown to white (source of variation unknown); upper mandible black to dark grey, lower mandible grey, sometimes blackish tip; tarsus and toes grey-green to olive-grey. Sexes alike. Juvenile has paler upperparts and much paler underparts washed buff, throat patch concealed, no rufous in wings. **Voice.** Song a nasal, mechanical "eh. eh-hhhhhh" or "ch-rr-r-r-r-r-r-r", c. 1-5 seconds long, sometimes lengthened into descending trill reminiscent of trills of *Laterallus* rails. Call during foraging "kr-krreenh" or short series of similar notes.

**Habitat.** River-island scrub; dense early-successional vegetation, especially *Tessaria* thickets, on young to middle-aged islands in major rivers, usually with tall grass or young *Gynerium* cane mixed with low bushes and grass. To 300 m, rarely 400 m.

**Food and Feeding.** Arthropods. Usually in pairs. Gleans items mainly from small branches, also foliage, within 1-2 m of ground; rarely, descends to ground. Recorded also as making short sally into air.

**Breeding.** No information.

**Movements.** Apparently resident. Seasonal flooding of habitat may force local movements, but this not yet studied.

**Status and Conservation.** Not globally threatened. Fairly common to common within appropriate habitat. Patchy and linear nature of its distribution, however, means that total population is rather small, despite its large geographical range.

**Bibliography.** Cory & Hellmayr (1925), Pacheco (1995), Parker *et al.* (1982), Pearman (1993b), Pinto (1978), Remsen (2003a), Remsen & Parker (1983), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rosenberg, G.H. (1990), Sick (1993, 1997), Stotz *et al.* (1996), Todd (1948b), Tostain *et al.* (1992), Zimmer (1936b).

## 90. McConnell's Spinetail

### *Synallaxis macconnelli*

**French:** Synallaxe de McConnell

**Spanish:** Pijui de McConnell

**German:** Östlicher Dunkeldickichtschlüpfer

**Taxonomy.** *Synallaxis macconnelli* Chubb, 1919. Mount Roraima, Bolívar, Venezuela.

Forms a superspecies with *S. moesta* and *S. cabanisi*, and all have often been treated as conspecific. Juvenile plumage differs from that of the other two. Race *yavii*, based on a single specimen from locality near range of nominate, is regarded by many as of dubious validity, e.g. possibly a subadult plumage of latter race; description, however, indicates that it is distinctive; considered better to retain it as a valid taxon, pending further study. Proposed race *griseipectus*, described from Mt Ptari-tepui, in Bolívar (Venezuela), is regarded as not diagnosable. Scientific name of species was based on misspelling, as species was named after F. V. McConnell, but original version stands. Three subspecies recognized.

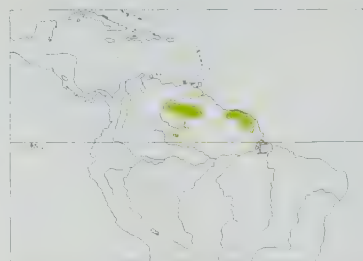
**Subspecies and Distribution.**

*S. m. yavii* Phelps, Jr. & Phelps, Jr., 1947 - Cerro Yavi, in S Venezuela (N Amazonas).

*S. m. macconnelli* Chubb, 1919 - SE Venezuela (tepui region of Bolívar, and Cerro de la Neblina in S Amazonas) and N Brazil (Cerro de la Neblina, Serra Parima).

*S. m. obscurior* Todd, 1948 - Surinam, French Guiana and extreme NE Brazil (Amapá).

**Descriptive notes.** 15-17 cm; 18-20 g. Rather large, dark and comparatively short-tailed spinetail. Nominative race has thin pale postocular line, greyish face; crown and nape dark rufous, back to uppertail-coverts dark olive-brown; wings mostly rufous-chestnut, distal portions of remiges fus-



couous brown; tail graduated, 8 rectrices, shafts thickened, tips pointed and slightly disintegrated, dull dark chestnut; chin and throat feathers blackish with some greyish-white edges; underparts brownish-grey, slightly paler in centre of belly, faintly tinged browner on flanks; iris chestnut; bill black, whitish base of lower mandible; tarsus and toes olive. Sexes alike. Juvenile has upperparts like adult, including rufous crown, but slightly paler and browner, throat faintly barred grey and white, breast and belly distinctly browner than adult. Race *yavii* described as much paler below than nominate, pale olive rather than dark grey (no indication of barring that would suggest juvenile plumage); *obscurior* is generally greyer and darker.

**Voice.** Song a weak, hoarse, low-pitched "kir-r-r-r-r-r, kik", final note much softer, sometimes introduced with "churr" note.

**Habitat.** Tropical lowland evergreen forest edge, montane evergreen forest edge, secondary forest; dense undergrowth at edge of tropical and lower montane forest; riverine forest locally in French Guiana. From 1000 m to 1900 m (nominate); 1000 m in S Venezuela (*yavii*); race *obscurior* ranges to much lower elevations, down to near sea-level.

**Food and Feeding.** Little known. Usually seen in pairs. Probably gleans arthropods from foliage and small branches within 1-2 m of ground.

**Breeding.** Nest a ball of sticks with lateral entrance tube, placed 3-4 m up in shrub. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common, but local in distribution. Estimated density at two forest sites in French Guiana was 2-5/km<sup>2</sup>. Evidently a true forest species which, unlike many *Synallaxis* spinetails, does not occur in heavily cut-over areas. Protection of adequate forest cover should ensure its survival.

**Bibliography.** Barrowclough *et al.* (1995), Chapman (1931), Cory & Hellmayr (1925), Dick *et al.* (1984), Haverschmidt & Mees (1994), Hilty (2003a), Mayr & Phelps (1967), Mees (1987), Novaes (1974, 1980), Phelps, W.H. & Phelps (1947), Phelps, W.H. Jr. (1972), Ridgely & Tudor (1994), Rodner *et al.* (2000), Thiollay (1986), Tostain *et al.* (1992), Vaurie (1971d), Zimmer & Phelps (1948).

## 91. Dusky Spinetail

### *Synallaxis moesta*

**French:** Synallaxe obscure

**German:** Westlicher Dunkeldickichtschlüpfer

**Spanish:** Pijui Oscuro

**Other common names:** Selater's Spinetail; Brown-tailed Spinetail (*brunneicaudalis*)

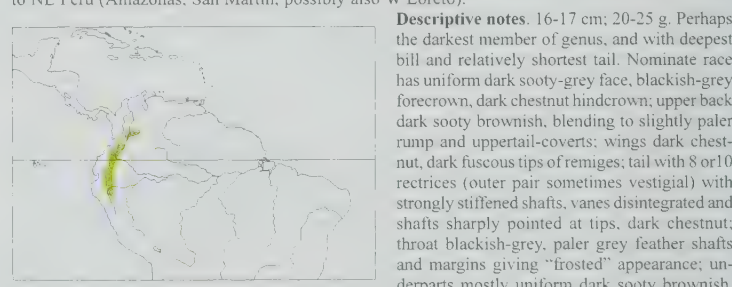
**Taxonomy.** *Synallaxis moesta* P. L. Selater, 1856. "Bogotá". Forms a superspecies with *S. macconnelli* and *S. cabanisi*, and all have often been treated as conspecific. Differs from both of those in tail structure. Race *brunneicaudalis* was formerly treated as a separate species. Three subspecies recognized.

**Subspecies and Distribution.**

*S. m. moesta* P. L. Selater, 1856 - foothills of E Andes in C Colombia (S Casanare S to NW Meta).

*S. m. obscura* Chapman, 1914 - E Andean foothills in S Colombia (Cauquetá, Putumayo).

*S. m. brunneicaudalis* Selater, 1858 - foothills of E Andes from extreme S Colombia (SE Nariño) S to NE Peru (Amazonas, San Martín, possibly also W Loreto).



**Descriptive notes.** 16-17 cm; 20-25 g. Perhaps the darkest member of genus, and with deepest bill and relatively shortest tail. Nominative race has uniform dark sooty-grey face, blackish-grey forecrown, dark chestnut hindcrown; upper back dark sooty brownish, blending to slightly paler rump and uppertail-coverts; wings dark chestnut, dark fuscous tips of remiges; tail with 8 or 10 rectrices (outer pair sometimes vestigial) with strongly stiffened shafts, vanes disintegrated and shafts sharply pointed at tips, dark chestnut; throat blackish-grey, paler grey feather shafts and margins giving "frosted" appearance; underparts mostly uniform dark sooty brownish,

slightly browner on flanks; iris rufous to brown; upper mandible black to slate, lower mandible blue-grey to light grey, sometimes dark tip; tarsus and toes greenish-grey to greyish-olive. Sexes alike. Juvenile lacks contrasting crown colour, has wing-coverts tipped dusky brownish, throat with faint grey and white barring, underparts more greyish, faintly mottled darker. Race *brunneicaudalis* is darker than nominate, mostly dark grey and more uniformly coloured below; *obscura* is even darker than previous, browner on back, tail and underparts, pale margins of throat feathers more restricted. **Voice.** Little known; low nasal chattering, "rha-a-a-a-a-a-a", may be call or song.

**Habitat.** River-edge forest edge, tropical lowland evergreen forest edge, secondary forest; dense undergrowth at edge of usually hilly tropical forest, and second growth, sometimes bamboo thickets; 250-1350 m.

**Food and Feeding.** Little known. Usually in pairs. Probably gleans arthropods from foliage and small branches within 1-2 m of ground.

**Breeding.** No information other than birds with enlarged gonads in Jun in Colombia.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon and local. Evidently a true forest species, not found in heavily cut-over areas. Occurs within a narrow elevational band in an altitudinal zone that is often under intense pressure from agriculture.

**Bibliography.** Balchin & Toyne (1998), Cadena, Alvarez *et al.* (2000), Chapman (1926), Cory & Hellmayr (1925), Hilty (2003a), Hilty & Brown (1986), Mayr & Phelps (1971), Mees (1987), Parker *et al.* (1982), Peña (1997), Pinto (1978), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salaman *et al.* (1999), Schulenberg (2002), Sick (1993, 1997), Vaurie (1971d), Zimmer (1936b).

## 92. Cabanis's Spinetail

### *Synallaxis cabanisi*

**French:** Synallaxe de Cabanis

**German:** Rostscheitel-Dickichtschlüpfer

**Spanish:** Pijui de Cabanis

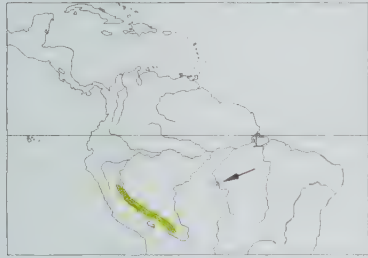


**Taxonomy.** *Synallaxis cabanisi* Berlepsch and Leverkühn, 1890, Chanchamayo Valley, Junín, Peru. Forms a superspecies with *S. macconnelli* and *S. moesta*, and all have often been treated as conspecific. Differs from former in juvenile plumage and from latter in tail structure. Racial identity of disjunct population in Brazil (N Mato Grosso) uncertain; tentatively assigned to nominate race. Two subspecies recognized.

**Subspecies and Distribution.**

*S. c. cabanisi* Berlepsch & Leverkühn, 1890 - Andean foothills in C & S Peru (Huánuco S to Puno, possibly also W Ucayali); probably also C Brazil (N Mato Grosso).

*S. c. fulviventris* Chapman, 1924 - foothills of Andes in N Bolivia (La Paz, W Beni, Cochabamba).



**Descriptive notes.** 16-18 cm; 16-24 g. Relatively large *Synallaxis* with typical plumage pattern but comparatively short tail. Nominate race has sooty grey-brown face with indistinct ochraceous chestnut postocular streak; forehead to hindneck dark rufous-chestnut, back to uppertail-coverts dark brown; wings rufous-chestnut, distal portions of remiges fuscous brown; tail graduated, 10 rectrices with thickened shafts, pointed and slightly disintegrated at tips, dull chestnut; chin and side of throat brownish-grey, blackish feathers of throat centre with extensive greyish margins (almost completely conceal black bases in head-on view), greyish-white malar region sharply defined; brownish-grey below, slightly paler in centre of belly, faintly tinged brown on flanks; iris reddish-brown to brown; upper mandible black, lower mandible silver to grey, sometimes blackish tip; tarsus and toes olive-grey to yellowish-grey. Distinguished from similar *S. moesta* mainly by rufous forehead, sharply defined malar region, whitish margins of throat feathers usually surrounding tips, giving slightly more barred than faintly streaked impression. Sexes alike. Juvenile lacks contrasting crown colour, has throat faintly barred grey and white, underparts more greyish, faintly mottled darker. Race *fulviventris* is smaller, has whiter throat and much paler underparts, breast tawny-olive, belly centre buff, not greyish. VOICE. Low nasal "nyap", often doubled, probably a call; song not described.

**Habitat.** Tropical lowland evergreen forest edge, secondary forest, river-edge forest; dense undergrowth at edge of usually hilly tropical forest, also second growth; often in *Guadua* bamboo or *Gynerium* cane thickets along rivers. At 200-350 m.

**Food and Feeding.** Little known. Usually found in pairs. Probably gleans arthropods from foliage and small branches within 1-2 m of ground.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common, but local in distribution. A poorly known species. Isolated population in Brazil only recently discovered, in 1997.

**Bibliography.** Alonso *et al.* (2001), Angehr & Auca (1997), Cory & Hellmayr (1925), Foster *et al.* (1994), Mayr & Phelps (1967), Mazar Barnett, Kirwan & Tobias (1998), Mees (1987), Parker, Parker & Plenge (1982), Parker, Stotz & Fitzpatrick (1997), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Tudor (1994), Sick (1993, 1997), Terborgh & Weske (1969), Terborgh *et al.* (1984), Vaurie (1971d), Zimmer, J.I. (1936b), Zimmer, K.J., Parker *et al.* (1997).

## 93. Marañon Spinetail

### *Synallaxis maranonica*

**French:** Synallaxe du Marañon

**Spanish:** Pijui del Marañón

**German:** Marañon-Dickichtschlüpfer

**Taxonomy.** *Synallaxis maranonica* Taczanowski, 1879, Huajango, Rio Marañón, Amazonas, Peru. Forms a superspecies with *S. gujanensis* and *S. albilora*. Often considered a race of former, but differs in plumage sufficiently that some authors have considered it more closely related to others of genus. Monotypic.

**Distribution.** Marañón Valley in N Peru (N Cajamarca, NW Amazonas) and extreme S Ecuador (S Zamora-Chinchipe).



**Descriptive notes.** 14-16 cm; 16-17 g. Long-billed, plain, dark *Synallaxis*. Has dull dark brownish-grey forehead and face; crown and upper back dull dark greyish-brown, blending to more rufescent brown rump and uppertail-coverts; wings dark rufous, remiges with dark fuscous tips; tail graduated, 10 rectrices, unusually blunt, dark rufous; throat pale greyish, blending to darker brownish-grey breast, belly slightly paler, flanks tinged olive-brown; iris brown; upper mandible black to dark grey, lower mandible blue-grey; tarsus and toes grey to olive. Sexes alike. Juvenile has faintly darker scalloping on breast and belly, pinkish-yellow

lower mandible. VOICE. Song a nasal "kiweeu, keeetu", repeated at intervals of 5-10 seconds, thus more slowly paced than voice of *S. gujanensis*.

**Habitat.** Gallery forest and secondary forest; undergrowth of deciduous woodland, often along rivers; locally at edge of more humid forest and regenerating clearings. At 500-1250 m.

**Food and Feeding.** Arthropods. Usually forages in pairs. Gleans food items from ground, foliage, and small branches within 1-2 m of ground.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Marañón Valley EBA. Uncommon to fairly common within its tiny range; difficult to observe, and possibly overlooked. Population estimated to be greater than 10,000 individuals, but declining owing to habitat destruction. Not known to occur in any formally protected area. Woodland in the Marañón Valley has suffered from long-term cultivation of land; remaining habitat is also at risk from the widespread planting of oil palms (*Elaeis guineensis*) and logging activities.

**Bibliography.** Begazo *et al.* (2001), Collar *et al.* (1992), Cory & Hellmayr (1925), Dinerstein *et al.* (1995), Parker *et al.* (1982), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Taczanowski (1884).

## 94. Plain-crowned Spinetail

### *Synallaxis gujanensis*

**French:** Synallaxe de Cayenne

**Spanish:** Pijui Coronipardo

**German:** Braunkappen-Dickichtschlüpfer

**Other common names:** Guianan Spinetail

**Taxonomy.** *Motacilla gujanensis* J. F. Gmelin, 1789, Guiana = "Cayenne".

Forms a superspecies with *S. maranonica* and *S. albilora*, and all three are often treated as conspecific. S races, geographical variation in which is step-clinal, are vocally closer to latter species and become more like it in plumage as their ranges approach each other. Thorough analysis of species limits required. Further, boundaries of various races uncertain; *inornata* intergrades with *certhiola* in Beni Valley (Bolivia), and birds from lower R Purús E to lower R Madeira (Brazil) are evidently intermediate between former and nominate; rigorous analysis may reveal widespread clinal variation that would render division into races impossible. Six subspecies recognized.

**Subspecies and Distribution.**

*S. g. columbiana* Chapman, 1914 - E Colombia (W Meta S to Putumayo).

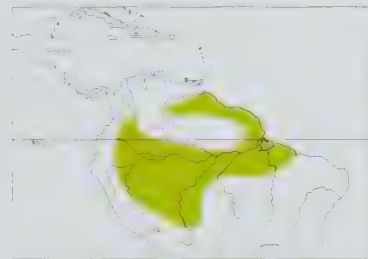
*S. g. gujanensis* (J. F. Gmelin, 1789) - E & S Venezuela (E Monagas S to Bolívar and N Amazonas), the Guianas and N & E Brazil (Amazonas and N Roraima E to Amapá and, S of R Amazon, from Pará and N Mato Grosso E to Maranhão and N Goiás).

*S. g. huallagae* Cory, 1919 - E Ecuador (Sucumbios, Napo), SE Colombia (Amazonas), E Peru (Amazonas S to E Cuzco and Madre de Dios) and N Bolivia (Pando).

*S. g. canipileus* Chapman, 1923 - SE Peru (W Cuzco, Puno).

*S. g. inornata* Pelzeln, 1856 - WC Brazil (Amazonas S of R Amazon) S to NE Bolivia (E Beni).

*S. g. certhiola* Todd, 1916 - E Bolivia (S Beni S to Santa Cruz).



**Descriptive notes.** 15-17 cm; 13-22 g. One of the duller and plainest *Synallaxis*. Nominat race has mostly plain dull greyish-brown face, hint of greyish-buff supercilium; crown and back to uppertail-coverts dull brownish, slightly darker and greyer on forecrown; wings dark rufous, duller tips of remiges; tail graduated, 10 rectrices, tips sharply pointed, shafts slightly stiffened, dark rufous; throat whitish, blending to brownish breast, flanks and undertail-coverts, belly paler; iris brown to light brown; upper mandible blackish, lower mandible grey to pale grey, sometimes with blackish tip; tarsus and toes olive-grey to

greenish-yellow, or blue-grey. Sexes alike. Juvenile has faint dusky scalloping on breast. Race *columbiana* has much whiter underparts than nominate, with greyer, less tawny, flanks; *huallagae* is darker and greyer, flanks olivaceous; *canipileus* resembles previous, but crown and underparts greyer, contrasting more with back, wings and tail slightly paler; *inornata* has upperparts a richer brown, especially on crown, auriculars more buffy, underparts much brighter rusty; *certhiola* is like previous, but auriculars more greyish, hindcrown greyer, back paler and more olivaceous (less rufescent), wings and tail paler, underparts conspicuously paler, centre of belly buffy white, underwing-coverts lighter ochraceous. VOICE. Song a sharp "téw, hu" or "kéék, uh", second note much lower-pitched than first, distinct pause between the two, often repeated for long periods; race *inornata* song differs, "chew, chu-weet" or "pyeeew, pip-sweet", first note more downward-inflected and third note upward-inflected, thus more like that of *S. albilora*. Also gives short trill followed by querulous note, "ttttt-cheeoo".

**Habitat.** River-edge forest, secondary forest, gallery forest; undergrowth in riverine habitats, from tall scrub dominated by *Gynerium* cane and undergrowth in tall *Cecropia* woodland on old river islands to edges of tall *varzea* forest; also in regenerating clear-cuts with dense bushy vegetation, and plantations. To 1200 m; below 600 m in Venezuela.

**Food and Feeding.** Arthropods: Orthoptera and larvae of Lepidoptera recorded. Usually in pairs. Gleans items from small branches, foliage and grass within 1-2 m of ground; also on ground.

**Breeding.** Eggs in Jan, Mar, May-Sept and Dec in Surinam. Presumably monogamous. Nest a globular mass c. 65 cm long × 25 cm × 25 cm, made of sticks, entrance hole to horizontal tunnel at long end, placed 1-2 m above ground in low, dense vegetation; territory size in SE Peru c. 2 ha. Clutch 2-3 eggs. Nests often parasitized by Striped Cuckoo (*Tapera naevia*) in Surinam.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common in most of its range. Rather local in Venezuela.

**Bibliography.** Angehr & Auca (1997), Barnett *et al.* (2002), Bond (1945), Cadena, Álvarez *et al.* (2000), Cory & Hellmayr (1925), Davis (1993), Foster *et al.* (1994), Graves & Zusi (1990), Guerrero & Arambiza (2001), Gyldestolpe (1945a, 1945b), Haverschmidt & Mees (1994), Hayes (1995), Hayes *et al.* (1990), Hellmayr (1907d), Hilty (2003a), Hilty & Brown (1986), Oren & Parker (1997), Parker & Bailey (1991), Parker *et al.* (1982), Pinto (1953), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1995, 1997), Rodner *et al.* (2000), Romero (1978), Rosenberg, G.H. (1990), Sick (1993, 1997), da Silva, Lima & Marceliano (1990), da Silva, Oren *et al.* (1997), Snyder (1966), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh & Weske (1969), Terborgh *et al.* (1984), Tostain *et al.* (1992), Willis & Oniki (1990), Zimmer, J.T. (1936b), Zimmer, K.J., Parker *et al.* (1997).

## 95. White-lored Spinetail

### *Synallaxis albilora*

**French:** Synallaxe ocre

**German:** Weißzügel-Dickichtschlüpfer

**Spanish:** Pijui Ocráceo

**Other common names:** Ochre-breasted Spinetail; Araguaia Spinetail (*simoni*)

**Taxonomy.** *Synallaxis albilora* Pelzeln, 1856, Cuiabá, Mato Grosso, Brazil.

Forms a superspecies with *S. maranonica* and *S. gujanensis*, and all three are often treated as conspecific. Similar in voice and plumage to S races of latter species; thorough analysis of species limits required. Race *simoni* considered a distinct species by some authors. Two subspecies recognized.

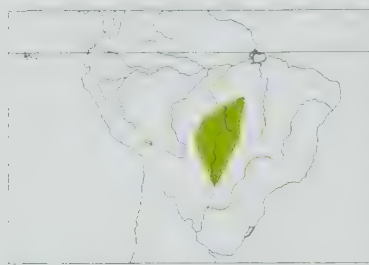
**Subspecies and Distribution.**

*S. a. simoni* Hellmayr, 1907 - C Brazil (E Mato Grosso, Goiás).

*S. a. albilora* Pelzeln, 1856 - E Bolivia (E Santa Cruz), SW Brazil (W Mato Grosso) and N Paraguay (E Alto Paraguay, NE Presidente Hayes, N Concepción).

**Descriptive notes.** 15-16 cm; 13-17 g. Nominat race has loreal area whitish, rest of face pale brownish-grey; crown and upper back dull greyish-brown, blending to rufous-brown rump; uppertail-





coverts dark rufous; wings bright rufous, tips of remiges fuscous brown; tail graduated, 10 rectrices, rather blunt, dark rufous; throat white; underparts bright tawny ochraceous, paler belly whitish in centre; iris cinnamon-brown; bill black to dark grey, lower mandible grey; tarsus and toes grey to dull brownish. Sexes alike. Juvenile is duller and more ochraceous below. Race *simoni* differs in having back uniform cinnamon-rufous, mostly white underparts, neck and sides only washed with buff, crown also browner, underwing-coverts paler ochraceous buff. **VOICE.** Song a sharp “keeew, kit-kweet”, usually repeated at intervals of 3–5 seconds.

**Habitat.** Undergrowth of gallery forest and riparian woodland and shrubs; to 1000 m.

**Food and Feeding.** Arthropods; recorded items are spiders, Orthoptera, Coleoptera, ants, Diptera. Usually forages in pairs, often among vines and tangles. Gleans food items from ground, and from foliage and small branches within 1–2 m of ground; rarely ascends above 3 m.

**Breeding.** Nest a large mass of sticks, placed in bush or small tree. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Common within its limited range; very numerous in suitable habitat in the Pantanal region.

**Bibliography.** Anon. (2003d), Cory & Hellmayr (1925), Ferreira de Vasconcelos & Trent (2002), Hayes (1995), Hayes *et al.* (1990), Hellmayr (1907d), Naumburg (1930), Parker, Gentry *et al.* (1993), Pinto & Camargo (1952), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Schubart *et al.* (1965), Stotz *et al.* (1996), Tubelis & Tomás (1999), Wetmore (1926).

## 96. Ochre-cheeked Spinetail

### *Synallaxis scutata*

**French:** Synallaxe à bavette **German:** Weißbrauen-Dickichtschlüpfer **Spanish:** Pijui Canela  
**Other common names:** Cinnamon-backed Spinetail

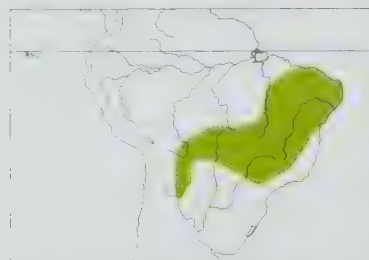
**Taxonomy.** *Synallaxis scutata* P. L. Slater, 1859, Bahia, Brazil.

Often placed with *S. candei* and *S. kollari* in a separate genus *Poecilurus*, but no diagnosable differences from current genus. Considered by some to form a superspecies with those two, but differs substantially from both in colour pattern and tail structure; plumage pattern suggests that it is more likely related to *S. albilora*. Whether darker race *whitii* can be distinguished from extremes of adjacent populations of nominate race, which varies clinally from NE to SW, or whether it is diagnosably distinct, merits investigation. Proposed race *neglecta*, from Ceará (Brazil), supposedly paler rufous above and whiter below, and proposed race *teretiala*, from Serra dos Carajás, in S Pará (Brazil), described from three specimens as smaller and whiter below than nominate, but neither is considered distinguishable. Two subspecies recognized.

**Subspecies and Distribution.**

*S. s. scutata* P. L. Slater, 1859 - E & C Brazil (S Pará and Maranhão E to Ceará and Bahia, S to N Mato Grosso, S Minas Gerais and N São Paulo).

*S. s. whitii* P. L. Slater, 1881 - S Brazil (S Mato Grosso), SE Bolivia (Santa Cruz, Chuquisaca, Tarija) and NW Argentina (Jujuy and Salta, possibly also W Formosa, S to Catamarca).



**Descriptive notes.** 13–14 cm; 12–19 g. Nominant race has broad, conspicuous whitish supercilia almost meeting across forehead, where more buffy, blackish loreal region mixed with whitish, weakly defined dull dark brownish postocular streak, ochraceous buff auriculars and rear malar area; narrow forehead spot blackish, blending to dull greyish-brown crown to upper back; rest of back dark rufous, becoming increasingly greyish-brown (reddish area contracting) from NE to SW; wings dark rufous, except for dark brownish lesser coverts and primary tips; uppertail-coverts and graduated tail rufous, 10 rectrices slightly

pointed, with short “spines”; throat white, black crescent-shaped patch on lower throat; rather dull pinkish-brown to pale ochraceous buff below, blending to paler belly with white in centre, underparts becoming increasingly ochraceous from NE to SW; iris dark chestnut to reddish-brown or brown; upper mandible black to dark grey, lower mandible grey to blue-grey, sometimes with dark tip; tarsus and toes greenish-grey to yellowish-olive. Sexes alike. Juvenile has faint darker scalloping on breast. Race *whitii* differs from nominate in having back to uppertail-coverts uniform brown without any rufous suffusion, wings and tail darker rufous, face and underparts slightly deeper ochraceous. **VOICE.** Song a shrill “tweet, to-wéet”, often repeated for long periods.

**Habitat.** Undergrowth and edge of deciduous forest, locally also in semi-deciduous forest; to 1700 m.

**Food and Feeding.** Arthropods; recorded dietary items include Orthoptera and Hymenoptera. Usually forages in pairs, occasionally in mixed-species flocks. Gleans food items mainly from ground.

**Breeding.** Presumably breeds primarily during austral spring-summer or during wet season; eggs in Apr in E Brazil and nestlings in Nov in NW Argentina. Probably maintains territory throughout year. Nest a large mass c. 45–65 × 35–60 × 20–30 cm, of twigs up to 20 cm long, roots and dead leaves, horizontal entrance tube 20–25 cm long leading to interior chamber c. 10 cm in diameter, placed on ground, often next to tree trunk or fallen log, camouflaged to look like pile of debris; a smaller nest also reported c. 20 cm above water in aquatic vegetation. Clutch 2–3 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common throughout range. Occurs in Pedra Talhada State Park, in Brazil, and Calilegua National Park, in Argentina.

**Bibliography.** Babarskas *et al.* (1995), Canevari *et al.* (1991), Cavalcanti & Marini (1993), Chebez *et al.* (1999), Cory & Hellmayr (1925), Davis (1993), Di Giacomo & López (1998), Fjeldså & Maijer (1996), Guerrero & Arambiza (2001), Kirwan *et al.* (2001), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), do Nascimento *et al.* (2000), Naumburg (1930), Oren (1985), Parker, Gentry *et al.* (1993), Parrini *et al.* (1999), de la Peña (1988), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Salvador (1988, 1990), Schulenberg & Awbrey (1997a), Short (1975), Sick (1993, 1997), Stotz *et al.* (1996), Teixeira & Luigi (1993), Todd & Carriker (1922b), Tubelis & Tomás (1999), Vaurie & Schwartz (1972), Whitney & Pacheco (1994), Willis (1992b), Willis & Oniki (1990, 1991).

## 97. White-whiskered Spinetail

### *Synallaxis candei*

**French:** Synallaxe à moustaches

**German:** Weißbart-Dickichtschlüpfer

**Spanish:** Pijui Barbiblanco

**Other common names:** Cande's Spinetail

**Taxonomy.** *Synallaxis* [sic] *Cande* d'Orbigny and Lafresnaye, 1838, Cartagena, Colombia.

Often placed with *S. scutata* and *S. kollari* in a separate genus *Poecilurus*, but no diagnosable differences from current genus. Forms a superspecies with second of those species, possibly also including the first, but that differs substantially in colour pattern and tail structure. Distributional boundaries of races require confirmation. Three subspecies recognized.

**Subspecies and Distribution.**

*S. c. venezuelensis* Cory, 1913 - extreme N Colombia (Guajira Peninsula, S to César) and NW Venezuela (Zulia E to E Falcón and Lara).

*S. c. candei* d'Orbigny & Lafresnaye, 1838 - N Colombia (N Sucre E to W Magdalena).

*S. c. atrigularis* (Todd, 1917) - N Colombia (middle Magdalena Valley of S Bolívar).



**Descriptive notes.** 15–17 cm; 14–16 g. Distinctive, boldly patterned spinetail. Nominant race has blackish face, broad rufous supercilium from just above eye back to nape; crown dark grey, many feathers blackish-centred, giving mottled look; hindneck to uppertail-coverts bright rufous; wings bright rufous, remiges with dark fuscous tips; tail long, 10 rectrices, shafts slightly stiffened, inner pairs almost square-tipped, feathers bright rufous, distal third dark fuscous; throat black, sharply outlined by broad white malar area and chin; breast and sides bright rufous, flanks slightly paler, belly white, undertail-

coverts dull pale rufous; iris dark brown; upper mandible black, lower mandible black or blackish with ill-defined yellowish at lower centre; tarsus and toes slate-grey to blue-grey. Sexes alike. Juvenile undescribed. Race *venezuelensis* has white throat, black restricted to band on lower throat, plumage generally paler, tail more sharply bicoloured; *atrigularis* lacks supercilium, has malar area and chin flecked greyish-white, back brown, base of tail darker, more dusky chestnut, breast duller, flanks more olivaceous. **VOICE.** Song a nasal “a-dit-dit-du”, often repeated, rather similar to voice of *S. unirufa*. Call a nasal “paa-pip”, extended to long nasal scold when disturbed; alarm a nasal “naaaa”.

**Habitat.** Tropical deciduous forest, arid lowland scrub, usually with cacti as prominent component of arborescent vegetation and ground cover; locally on saltflats with scattered bushes, overgrown pastures, and edges of mangroves. Sea-level to 1100 m.

**Food and Feeding.** Arthropods. Usually forages in pairs. Gleans items mainly from ground beneath shrubs, but also from twigs and branches within 2 m of ground.

**Breeding.** Breeds evidently during wet season, Oct-Jan; eggs and nestlings in Dec in Venezuela. Presumably monogamous. Nest a bulky mass c. 70 cm long, 30–50 cm wide, 30 cm deep, of thorny twigs and branches, slightly curved tunnel leading to inner chamber, latter 10–13 cm in diameter with walls made of thorny twigs, bottom usually lined with green pubescent leaves of *Croton flavens* (or, if those not available, non-pubescent leaves of *Cercidium praecox*), all parts of nest covered with thatching of sticks and bark, on outside forming platform, entrance hole on upper end of structure and often surrounded by pile of thorny twigs elevated above platform, sometimes pieces of snake or lizard skin added to lining or thatch; usually placed 1.3–2.5 m above ground in thorny bush. Clutch 3–4 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Caribbean Colombia and Venezuela EBA. Fairly common to common throughout most of range. No data on densities, but in Venezuela, and presumably elsewhere, populations may be quite large in favourable areas.

**Bibliography.** Bosque & Lentino (1987), Collins *et al.* (1991), Cory & Hellmayr (1925), Hilty (2003a), Hilty & Brown (1986), Marini (2001), Remsen (2003a), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vaurie & Schwartz (1972), Whitney & Pacheco (1994).

## 98. Hoary-throated Spinetail

### *Synallaxis kollari*

**French:** Synallaxe du Roraima

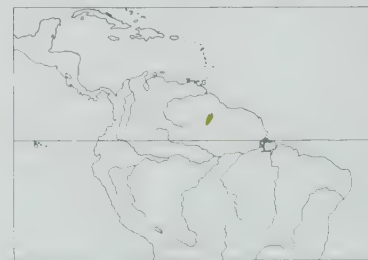
**German:** Grauwangen-Dickichtschlüpfer

**Spanish:** Pijui de Roraima

**Other common names:** Kollar's Spinetail

**Taxonomy.** *Synallaxis Kollari* Pelzelin, 1856, Forte do São Joaquim, Rio Branco, Roraima, Brazil. Often placed with *S. scutata* and *S. candei* in a separate genus *Poecilurus*, but no diagnosable differences from current genus. Forms a superspecies with second of those species, possibly also including the first, but that differs substantially in colour pattern and tail structure. Monotypic.

**Distribution.** N Brazil, in R Branco region of N Roraima; sight record from adjacent Guyana.



**Descriptive notes.** 15–16 cm. Has grey-brown crown and lores, wide cinnamon-rufous supercilium from just above eye to nape, slightly darker auriculars diffusely tinged greyish at lower edge, indistinct whitish-buff eyering wider at rear; upperparts, including wings, bright rufous, remiges with dark fuscous tips; tail with 10 rectrices, bright rufous; malar area, chin and upper throat white with black specks, lower throat black; breast cinnamon-rufous like neck side, becoming paler ochraceous on flanks, almost whitish in centre of belly; iris dark reddish-brown; upper mandible blackish-grey, lower mandible blue-grey

with blackish tip; tarsus and toes blue-grey. Differs from *S. candei* mainly in head and tail patterns. Sexes alike. Juvenile undescribed. **VOICE.** Song is of 2 notes, the second higher than first, repeated at 1-second intervals.



**Habitat.** Seasonally flooded gallery forest with dense, vine-rich undergrowth in savannas; 100 m.  
**Food and Feeding.** Little known. Food arthropods. Probably forages usually in pairs. Gleans items from near ground in dense undergrowth.  
**Breeding.** Presumably monogamous. An incomplete nest found in Jul was a cup of twigs, placed 1·5 m above ground in dense bush. No further information.  
**Movements.** Resident.  
**Status and Conservation.** **ENDANGERED.** Restricted-range species; present in Rio Branco Gallery Forest EBA. Known from only about eight localities within a relatively small region, none with any official protection. Total population estimated at fewer than 1000 individuals in 1990s,

and probably declining. Although it inhabits what is, fortunately, a remote area, some agricultural development, especially rice cultivation, has occurred along the rivers in N Roraima; fires may also be a major threat. Habitat preference presumably much more restricted than simply seasonally flooded forest, which is widespread in Amazonia. Surveys needed in order to determine the species' current distribution and population.  
**Bibliography.** Anon. (2003e), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cory & Hellmayr (1925), Ferreira de Vasconcelos & Trent (2002), Forrester (1995), Grosset & Minns (2002), Pinto (1978), Ridgely & Tudor (1994), Rodner *et al.* (2000), Sick (1993, 1997), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wege & Long (1995), Zimmer, Parker *et al.* (1997).



ssp *cinnamomea*

ssp *striatipectus*

ssp *bolivari*

100

99

ssp *stictothorax*

ssp *carri*

ssp *terrestris*

ssp  
*chinchipensis*

101

ssp *maculata*

inches 2  
cm 5

PLATE 19

102

103

ssp  
*cinereiventris*

ssp *gularis*

104

ssp *rufiventris*

105

ssp *weskei*

ssp *marcapatae*

ssp *vulpina*

ssp *dissita*

107

ssp *reiseri*

ssp *albiceps*

106

ssp *discolor*

108

109

110

111

ssp *pyrrhophia*

ssp *striaticeps*



## 99. Stripe-breasted Spinetail

### *Synallaxis cinnamomea*

**French:** *Synallaxe guioiti*

**German:** Streifenbrust-Dickichtschlüpfer

**Spanish:** Pijui Pechiestriado

**Other common names:** Cinnamomeous Spinetail

**Taxonomy.** *Synallaxis* [sic] *cinnamomeus* Lafresnaye, 1843, Colombia = "Bogotá".

Although its unusual plumage pattern suggests no close relatives, voice is similar to that of many congeners. Seven subspecies recognized.

#### **Subspecies and Distribution.**

*S. c. cinnamomea* Lafresnaye, 1843 - extreme NW Venezuela (Perijá Mts) and E Andes of Colombia (Magdalena, Santander S to Cundinamarca).

*S. c. aveledoi* Phelps, Sr. & Phelps, Jr., 1946 - W Venezuela (Falcón, W & S Lara to N Táchira) and Andes of N Colombia (Norte de Santander).

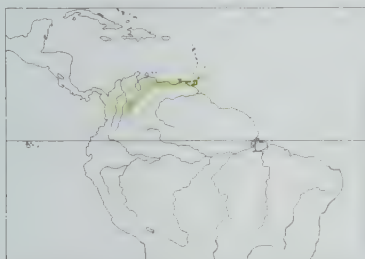
*S. c. bolivari* Hartert, 1917 - coastal range of NC Venezuela (Yaracuy E to Miranda and N Guárico).

*S. c. striatipectus* Chapman, 1899 - NE Venezuela (W Sucre, Anzoátegui).

*S. c. pariae* Phelps, Sr. & Phelps, Jr., 1949 - Paria Peninsula (Cerro Humo, Cerro Azul), in NE Venezuela.

*S. c. carri* Chapman, 1895 - Trinidad.

*S. c. terrestris* Jardine, 1847 - Tobago.



**Descriptive notes.** 14-15 cm; 15-23 g. Relatively short-tailed *Synallaxis* with unusual pattern, conspicuously streaked below. N nominate race has dark dull rufous face and vague supercilium, rich brown crown and upperparts; wings rufous-chestnut, remiges with blackish tips; tail graduated, either 8 or 10 rectrices, degree of individual variation differing geographically, sharply pointed, distal 1-2 mm nearly lacking barbs and giving "spiny" appearance, shafts somewhat stiffened, rich brown; throat black with white streaks; underparts rufous with fulvous streaks, belly paler with streaks duller; iris reddish to creamy

brown to dark (source of variation uncertain); upper mandible dark horn to black, lower mandible grey-horn or pinkish blending to dark horn tip; tarsus and toes black to greyish to pale grey-brown. Sexes alike. Juvenile is browner, throat pattern much less distinct, not so black and spots weakly defined, streaks below less distinct. Race *aveledoi* is paler and more yellowish-brown above, buff with dusky streaks below; *bolivari* is more olivaceous above, has whitish chin and throat, throat with wavy black streaks, breast and sides light buffy cinnamon with conspicuous blackish streaks, belly buffy whitish with less conspicuous streaks, flanks and undertail-coverts brownish with some faint streaks; *striatipectus* has darker upperparts, chestnut wings and tail, conspicuous buff supercilium, ochraceous face and neck with blackish edging, ochraceous and heavily streaked blackish below; *pariae* resembles previous, but supercilium less distinct, streaks below duller and more olivaceous (not blackish), belly with fewer streaks; *carri* is dark brown above, no supercilium, throat blacker with narrower white streaking, underparts dull olive-brown with only faint streaking; *terrestris* is palest, generally more olivaceous brown, unstreaked below except for some blurred streaks on breast. **VOICE.** Little geographical variation. Song a nasal, sharp "chik-kwek" or "chúrt-wert", first note higher, second inflected, often repeated rapidly for extended periods; also gives soft, whining "peeuur" or querulous "chew".

**Habitat.** Tropical deciduous forest, gallery forest, arid montane scrub, second-growth scrub; undergrowth and treefalls at edge of or in tropical lowland forest and lower montane forest, also second-growth woodland and overgrown coffee plantations; locally in deciduous forest; forest undergrowth in Trinidad and Tobago. To 2000 m; mostly above 700 m in Venezuela.

**Food and Feeding.** Arthropods; flying ants recorded as taken. Usually in pairs, occasionally in small mixed-species flocks. Gleans items from foliage and small branches within 1-2 m of ground; also gleans and flakes leaf litter on ground.

**Breeding.** Breeding records scattered throughout year in Trinidad; recorded Mar-Aug in Tobago. Presumably monogamous. Nest a mass of thick twigs and dead leaves c. 40 cm tall and 25 cm in diameter, entrance on top, tunnel 15 cm long bending near entrance, placed on sloping ground or up to 3 m above ground in bush. Clutch 3 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout range. In Venezuela, very common in mountains of Paria Peninsula, less common and more local in Andes. Occurs in Asa Wright Nature Centre, in Trinidad, and in Henri Pittier, Macarao and Cueva del Guácharo National Parks, in Venezuela. Thrives in forested areas opened by cutting.

**Bibliography.** Anon. (2003k), Belcher & Smoother (1936), Bond *et al.* (1989), Cory & Hellmayr (1925), Dunning (1993), French (1991), Herklots (1961), Hilty (2003a), Hilty & Brown (1986), Meyer de Schauensee (1946a), Phelps & Phelps (1946, 1963), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stotz *et al.* (1996), Wetmore (1926).

## 100. Russet-bellied Spinetail

### *Synallaxis zimneri*

**French:** *Synallaxe de Zimmer* **German:** Rostbauch-Dickichtschlüpfer **Spanish:** Pijui de Ancash

**Taxonomy.** *Synallaxis zimneri* Koepcke, 1957, near Colcabamba, Casma, Ancash, 2800 m, western Andes of central Peru.

Distinctive, with no obvious close relatives. Some authors have suggested that it merits placement in a separate genus; song and nest, however, are similar to those of many congeners. Monotypic.

**Distribution.** W slope of W Peruvian Andes in W La Libertad and Ancash (Cordillera Negra).

**Descriptive notes.** 13 cm; 12-14 g. One of the most atypical species in the genus in terms of plumage and tail structure. Has blackish loreal area, slightly paler auriculars, broken whitish eyering, vague grey-brown supercilium; crown grey blending to dull dark brownish back, contrasting bright rufous uppertail-coverts; wing-coverts dark rufous, remiges dull brownish; tail graduated, 10



rectrices, blunt, central pair dark fuscous, rest mainly rufous; chin whitish, blending to grey-brown throat and upper breast, faintly streaked; rest of underparts rufous, slightly paler in centre of belly, darker on undertail-coverts; iris dark red-brown; bill black, sometimes grey base of lower mandible; tarsus and toes dark grey. Sexes alike. Juvenile is like adult, but bill shorter and paler. **VOICE.** Song a nasal "quick-quick" or "cue-quec", c. 1 second long, repeated at intervals of 1-2 seconds; chattering trill during disputes.

**Habitat.** Arid montane scrub 1-3 m tall, usually thorny, with occasional isolated short trees, often at edge of dry forest; plants species include *Acca*, *Berberis*, *Cestrum*, *Cordia*, *Croton*, *Dasyphyllum*, *Duranta*, *Heperomeles*, *Randia*, *Sebastiania*, *Solanum*. At 2100-2800 m, mostly above 2500 m; occasionally slightly lower or higher.

**Food and Feeding.** Contents of 8 stomachs consisted of c. 70% arthropods, predominantly winged insects and spiders, and 30% seeds and plant material by volume. Usually forages in pairs, rarely in mixed-species flocks, from understorey to ground. Gleans arthropods from foliage, moss and small branches; also gleans and scratches leaf litter on ground.

**Breeding.** Nestlings in May. Monogamous. Nest a globular mass c. 25-30 cm in diameter, of interwoven thorny twigs, upward-slanting lateral entrance tube c. 20 cm long, also a bulge 18 cm in diameter on upper side of main mass (almost like a third section, but not hollow), inner chamber c. 20 cm in diameter, shallow nest cup 4 cm across, lined mostly with leaf rachides; placed 3-5-4-2 m up in tall shrub (*Sebastiania obtusifolia*) or small tree (*Myrcianthes quinqueloba*) in dense forest, away from usual feeding areas. Clutch at least 2 eggs; female, having lost mate, fed chicks 28 times in 1 hour 33 minutes, each visit 2-5 seconds long, fledglings left nest very soon after.

**Movements.** Resident.

**Status and Conservation.** 1 **DANGERED.** Restricted-range species: present in Peruvian High Andes EBA. Uncommon to locally abundant within very small range. Total population estimated at between 1000 and 3000 individuals in 1990s; believed to be declining as a result of habitat destruction. Does not occur in any protected areas. Habitat in many areas being seriously degraded by livestock grazing, leading to removal of undergrowth and subsequent erosion; scrub also being cleared for agricultural expansion. Surveys required in order to determine this species' precise current distribution and to assess population more accurately. Establishment of one or more protected areas would be of great benefit in ensuring its future survival.

**Bibliography.** Begazo *et al.* (2001), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Fjeldsa & Krabbe (1990), Franke & Salinas (2001), Hunnybun (1999), Koepcke (1957), Mayr (1971), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wege & Long (1995).

## 101. Necklaced Spinetail

### *Synallaxis stictothorax*

**French:** *Synallaxe à collier* **German:** Fleckenbrust-Dickichtschlüpfer **Spanish:** Pijui Collarejo

**Other common names:** Spotted-breasted Spinetail; Chinchipe Spinetail (*chinchipensis*)

**Taxonomy.** *Synallaxis stictothorax* P. L. Selater, 1859, Guayaquil, Ecuador.

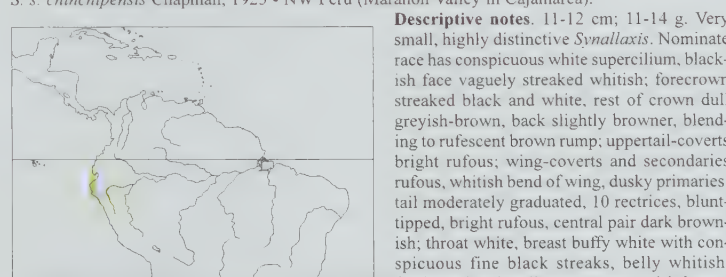
In the past, was sometimes placed in a monotypic genus *Chinchipe* or in *Siptornopsis*. More similar to latter or to *Cranioleuca* in foraging behavior, voice and nest structure; on the other hand, one genetic study based on protein electrophoresis found this species to cluster with present genus rather than with *Cranioleuca*. Further research needed. Race *chinchipensis* treated as a separate species by some authors, but published evidence for this is weak. Three subspecies recognized.

#### **Subspecies and Distribution.**

*S. s. stictothorax* P. L. Selater, 1859 - SW Ecuador (C Manabí S to W Guayas and Puna I).

*S. s. maculata* Lawrence, 1874 - extreme SW Ecuador (S Loja) and NW Peru (Tumbes, Piura, Lambayeque, La Libertad).

*S. s. chinchipensis* Chapman, 1925 - NW Peru (Marañón Valley in Cajamarca).



**Descriptive notes.** 11-12 cm; 11-14 g. Very small, highly distinctive *Synallaxis*. N nominate race has conspicuous white supercilium, blackish face vaguely streaked whitish; forecrown streaked black and white, rest of crown dull greyish-brown, back slightly browner, blending to rufescent brown rump; uppertail-coverts bright rufous; wing-coverts and secondaries rufous, whitish bend of wing, dusky primaries; tail moderately graduated, 10 rectrices, blunt-tipped, bright rufous, central pair dark brownish; throat white, breast buffy white with conspicuous fine black streaks, belly whitish, flanks and undertail-coverts tawny; iris brown

to reddish-brown or brownish-red; bill black, sometimes much of lower mandible grey; tarsus and toes blue-grey to dark grey. Sexes alike. Juvenile undescribed. Race *maculata* has slightly more rufescent back, more extensive rufous in wing (contrast between dark brownish primary coverts and tawny margins of outer primaries), more extensive rufous in tail, only central pair of rectrices with any dusky colour (on distal portion of inner web); *chinchipensis* has much duller, buffy supercilium, greyer flanks, underparts spotted rather than streaked. **VOICE.** Song distinctive, a burst of rapid sputtering notes that descend and fade towards end; call a repeated "chit" or "tset".

**Habitat.** Arid lowland scrub, also deciduous woodland edge; below 400 m.

**Food and Feeding.** Arthropods. Usually forages in pairs. Gleans items from moss, dead leaves and small branches, usually within 1-2 m of ground; unlike its congeners, adopts acrobatic feeding postures.

**Breeding.** Nest a rounded, rambling stick structure with side entrance, similar to that of some *Phacelodomus* thornbirds. No further information.



**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Tumbesian Region EBA and Marañón Valley EBA. Fairly common within rather small range. Occurs in Machalilla National Park, in Ecuador, and Tumbes National Reserve, in Peru. Tolerates moderate habitat degradation.

**Bibliography.** Begazo *et al.* (2001), Best & Clarke (1991), Braun & Parker (1985), Cook (1996), Cory & Hellmayr (1925), Koepcke (1963), Marchant (1960), Parker & Carr (1992), Parker *et al.* (1982), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Taczanowski (1884), Walker (2003).

Genus *SIPTORNOPSIS* Cory, 1919

## 102. Great Spinetail

*Siptornopsis hypochondriaca*

**French:** Synallaxe à poitrine rayée

**Spanish:** Curutié Grande

**German:** Weißbrust-Dickichtschlüpfer

**Other common names:** Salvin's Spinetail

**Taxonomy.** *Siptornis hypochondriacus* Salvin, 1895, Malca and Cajabamba, Cajamarca, Peru. Close relationship to *Synallaxis stictothorax* suggested by plumage pattern and biogeography. Monotypic.

**Distribution.** NC Peru in upper Marañón Valley (S Cajamarca, extreme SW Amazonas, La Libertad, N Ancash).



**Descriptive notes.** 17-19 cm; 23-26 g. Large-billed, long-tailed spinetail. Broad white supercilium extends to side of forehead; lores and auriculars dark greyish, becoming brownish and streaked towards neck; crown dull brown with faint buffy streaks in forehead centre, blending to slightly paler back; rump and uppertail-coverts light greyish-brown; rufous lesser and median coverts, brown greater coverts, and blackish primary coverts, dull tawny-olive margins of dusky remiges; tail graduated, 12 rectrices with slightly stiffened shafts, rather blunt tips, dusky brown; throat white, malar area tinged creamy; breast white with conspicuous blackish streaks, streaks strongest at sides, belly whitish with some faint dusky streaking at margins, flanks brownish with indistinct dark-edged whitish streaks fading posteriorly; undertail-coverts whitish with hint of blurred dark streaks; iris chestnut to reddish-brown; lower mandible black to dark brown, upper mandible blue-grey usually with dusky tip; tarsus and toes blue-grey. Sexes alike. Juvenile is less extensively streaked below, perhaps has pinkish lower mandible. Voice. Song a loud, rapid burst of sputtering notes, decreasing in speed towards end, similar to that of *Synallaxis stictothorax*, often given as duet, with some whining notes added by female. Call a liquid "chee-cheep", often given immediately before song.

**Habitat.** Xerophytic thorny montane scrub with cacti, at lower elevations mixed with Bombax trees; 1650-3000 m.

**Food and Feeding.** Recorded diet items are Coleoptera. Usually in pairs. Gleans arthropods from dense foliage and small branches, usually within 1-2 m of ground.

**Breeding.** Builds large, enclosed stick nest, reminiscent of that of *Phacellodomus* thornbirds. No further information.

**Movements.** Resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Marañón Valley EBA. Uncommon to rare. Known from few localities. Owing to its small and linear range, this species' total population is rather small, estimated at fewer than 10,000 individuals in 1990s. Declining as a result of habitat destruction. Its apparent dependence on dense natural vegetation makes it vulnerable to habitat degradation caused by grazing and firewood-cutting. Remaining areas of scrub also threatened, at least in some areas, by agricultural expansion and the planting of oil palms (*Elaeis guineensis*).

**Bibliography.** Begazo *et al.* (2001), Bond (1945), Braun & Parker (1985), Cory & Hellmayr (1925), Dinerstein *et al.* (1995), Fjeldså & Krabbe (1990), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Remsen (2003a), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Walker (2003).

Genus *GYALOPHYLAX* J. L. Peters, 1950

## 103. Red-shouldered Spinetail

*Gyalophylax hellmayri*

**French:** Synallaxe de Hellmayr

**Spanish:** Pijui de Hellmayr

**German:** Rotschulter-Dickichtschlüpfer

**Other common names:** Reiser's Spinetail

**Taxonomy.** *Synallaxis hellmayri* Reiser, 1905, Fazenda Serra, Rio Grande, Bahia, Brazil. Previously named *Synallaxis griseiventris*, but that name invalid. Included in *Synallaxis* by many authors, and thought by others to be possibly more closely related to *Synallaxis hypospodia* than either is to others of that genus, the two having similarities in voice, rectrix shape and plumage; differs morphologically from that genus, however, in having 12 rectrices, thicker tarsus and toes, different bill shape. Was at one time placed in *Asthenes*, and described by some authors as resembling members of that genus. Considered better retained in monotypic genus until relationships resolved. Monotypic.

**Distribution.** E Brazil (NE Piauí, W Pernambuco, N Bahia, extreme N Minas Gerais).



**Descriptive notes.** 18-19 cm; 25-26 g. Superficially like other spinetails, but subtle differences include wedge-shaped bill. Male has crown, back and upperparts uniform fuscous brown; dull chestnut wing-coverts, fuscous brownish-grey remiges; tail strongly graduated, 12 rectrices, slightly stiffened shafts, blunt tips, blackish; chin and throat black; underparts fuscous brownish-grey, paler belly buffier in centre; iris orange to rufescent; bill black to blackish-brown; tarsus and toes grey. Sexes probably alike; unconfirmed report that one member of pair always darker overall, with blacker throat, brighter red shoulders, darker

orange iris. Juvenile has greyish wing-coverts. Voice. Song a loud, fast, accelerating series that fades towards end, 3-5-4-5 seconds long, usually introduced with 1-4 quiet, widely spaced dry notes. Call given reciprocally by members of foraging pair "tre-tre" or "tchi-kr", often repeated; alarm a quiet oscillating scold c. 1 second in duration.

**Habitat.** Arid, scrubby deciduous woodland (e.g. *caatinga* "arbustiva densa"), usually with dense thickets of terrestrial bromeliads (especially *Bromelia laciniosa*); 200-400 m.

**Food and Feeding.** Mainly arthropods; recorded dietary items are spiders, Coleoptera, Orthoptera, also seeds. Forages usually in pairs, generally on ground or within 1-2 m of it. Gleans arthropods from leaf litter, foliage (including *B. laciniosa* leaves), debris trapped in foliage, and small branches. Searching of dead leaves on ground is the predominant foraging behaviour, at least during dry season; keeps head close to ground, as if listening for movements of hidden arthropods, and gleans, flakes and tosses dead leaves; sometimes uses feet simultaneously to disturb leaves.

**Breeding.** Season probably Oct-Apr; eggs in Oct and fledglings in Jan. Presumably monogamous. One nest described, a large mass 50-100 cm long, 25 cm high, built from spines of the cactus *Pilocereus gounellei*, lateral entrance tube 25 cm long, entrance hole opening diagonally upwards. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in North-east Brazilian Caatinga EBA. Locally common and fairly widespread within range. Only recently discovered in Minas Gerais. Appears to be less restricted to woodland containing the large terrestrial bromeliad *B. laciniosa* than was previously believed. Recently found to be present in areas disturbed by cattle grazing and goats. Intensive grazing, however, remains a threat, as also do burning of dry woodland, exploitation of dry *caatinga* for charcoal, and conversion of habitat to agricultural uses.

**Bibliography.** Collar *et al.* (1994), Cory & Hellmayr (1925), Ihering (1914), Kirwan *et al.* (2001), do Nascimento *et al.* (2000), Parrini *et al.* (1999), Peters (1950), Pinto (1978), Ridgely & Tudor (1994), Sick (1993, 1997), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Teixeira (1992), Willis (1992b).

Genus *HELLMAYREA* Stolzmann, 1926

## 104. White-browed Spinetail

*Hellmayrea gularis*

**French:** Synallaxe à sourcils blancs

**Spanish:** Pijui Paramero

**German:** Kurzschwanz-Dickichtschlüpfer

**Other common names:** Lafresnaye's (White-browed) Spinetail

**Taxonomy.** *Synnalaxis* [sic] *gularis* Lafresnaye, 1843, Colombia = "Bogotá".

Formerly placed in genus *Synallaxis*, but differs in voice and foraging behaviour; almost certainly more closely related to *Cranioloeua* or *Schizoeaca*. Validity of race *cinereiventris* merits investigation, as similar-looking birds have been reported near localities of nominate in Cundinamarca (Colombia). Proposed races *rufipectus* (C Andes of Colombia), described as more rufescent above and below, and *pichincae* (Andes of Ecuador), said to differ from it in being paler below and darker above, considered indistinguishable from nominate. Four subspecies recognized.

**Subspecies and Distribution.**

*H. g. gularis* (Lafresnaye, 1843) - Andes of W Venezuela (S Táchira), Colombia (all three ranges), Ecuador and N Peru (Cajamarca).

*H. g. brunneidorsalis* Phelps, Sr. & Phelps, Jr., 1953 - NE Colombia and NW Venezuela (Perijá Mts).

*H. g. cinereiventris* (Chapman, 1912) - Andes of W Venezuela (Trujillo S to N Táchira).

*H. g. rufiventris* (Berlepsch & Stolzmann, 1896) - Andes of N & C Peru (Amazonas S to Junín).



**Descriptive notes.** 11-13 cm; 11-15 g. Distinctively short-tailed spinetail. Nominate race has narrow whitish supercilia nearly meeting on forehead; loreal region, face and malar area dark rufescent brown, vague darker streaks on auriculars; centre of forehead, crown and nape rufescent brown with faintly paler shaft streaks, upperparts, including wings, also rufescent brown; tail graduated, 10 rectrices slightly stiffened basally, sharply pointed, nearly lacking barbs at tips, slightly disintegrated, rufescent brown; throat white, narrow lower border of blackish-based feathers giving weak "necklaced" look; under-

parts uniform cinnamon-brown to buffy brown, sometimes greyer; iris dark brown to brown; upper mandible black to dark grey, lower mandible pinkish-horn to grey with dark tip; tarsus and toes olive, olive-brown or olive-yellowish. Sexes alike. Juvenile has dark tips on breast and belly feathers. Race *brunneidorsalis* differs from nominate in having browner, less rufescent upperparts, paler and greyer underparts, brown restricted to flanks; *cinereiventris* is darker, richer brown above, underparts brownish-grey; *rufiventris* is darker overall, more rufescent above, more dark chestnut below. Voice. Song a series of high-pitched notes ending in trill, "chit-chit-



per mandible black, lower mandible dull horn to silvery horn, cutting edges paler; tarsus and toes dull greenish-olive or greyish. Differs from very similar *C. vulpecula* mainly in darker breast. Sexes alike; some suggestion that male may have more rufescent back (contrasting with crown) than female. Juvenile has more greyish upperparts, underparts variably washed ochraceous with faint mottling. Race *dissita* has brighter, more rufescent underparts, reduced brown on forehead, shorter bill; *apurensis* is darkest, darker crown, wings and tail, also less contrast between forehead and crown; *foxi* has darker rufous upperparts than nominate; *reiseri* is palest, has more rufescent upperparts, paler and more buffy underparts, no hint of streaks on breast. Voice. Song a rapid series of emphatic notes gradually accelerating but fading, lasting c. 2·5–3 seconds, “ch-ch-ch-ch-ch-ch-chewewewewewewew”, also described as descending series of scolding, complaining notes, “chow-chow-chow-chow-chow-chow-chow”, length variable; frequently duets; race *dissita* song



evidently different, more like that of *C. erythrops*. Call a soft, nasal, rising "choy", "choy-choy" or "kuee-kwee".

**Habitat.** Gallery forest, river-island scrub, riparian thickets; variety of wooded water-edge habitats, including *varzea* forest with dense vine-choked vegetation, shrubby vegetation at edges of lakes and streams; from near sea-level to 400 m. Race *dissita* inhabits forest and edge.

**Food and Feeding.** Arthropods; recorded items are Lepidoptera larvae (including Geometridae) and Coleoptera (including Elateridae). Singly or in pairs, occasionally with mixed-species flocks. Forages by hitching along small branches, mostly 1-7 m above ground. Acrobatically gleans arthropods from bark, bases of leaf stems, and dead leaves, occasionally from green foliage.

**Breeding.** Eggs in Jun-Jul in W Venezuela and Nov in E Brazil. Presumably monogamous. Nest a roughly globular mass c. 20-40 cm in diameter, of grass, roots and sticks, camouflaged to look like flood debris, chamber lined with shreds of bark and lichens, 1-4 m above ground or water and wedged into fork of partly submerged sapling or bush; although some early authors thought that the mass was deposited by rising water, direct observations indicate that it is constructed by the birds themselves. Clutch 2-3 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout range. Race *dissita*, often treated as possibly a separate species, is currently considered Near-threatened; also a restricted-range taxon, present in South Central American Pacific Slope EBA. Fairly common on Coiba I, but possibly threatened by introduced predators and vulnerable to natural events such as hurricanes.

**Bibliography.** Anon. (1998a), Cherrie (1916b), Cory & Hellmayr (1925), García *et al.* (1999), Gyldestolpe (1945a, 1945b), Hilty (2003a), Hilty & Brown (1986), Marini (2001), Naumburg (1930), Parker *et al.* (1982), Peters (1950), Pinto (1978), Pinto & Camargo (1952), Piratelli *et al.* (2000), Remsen & Traylor (1989), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Rodner *et al.* (2000), Rosenberg, G.H. (1990), Schubert *et al.* (1965), Sick (1993, 1997), Sneath (1935), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Traylor (1958), Vuilleumier (1980a), Wetmore (1957, 1972), Willis & Oniki (1990), Zimmer, J.T. & Phelps (1948), Zimmer, K.J. (1997), Zimmer, K.J. & Hilty (1997), Zimmer, K.J., Parker *et al.* (1997).

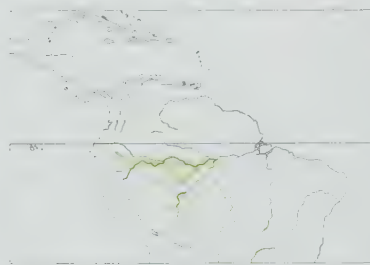
## 108. Parker's Spinetail *Cranioleuca vulpecula*

**French:** Synallaxe de Parker **German:** Parkers Buschschlüpfer **Spanish:** Curutié de Parker

**Taxonomy.** *Synallaxis vulpecula* P. L. Slater and Salvin, 1866, Rio Ucayali, Peru.

Almost certainly the sister-species to *C. vulpina*; formerly considered conspecific, but they are locally syntopic and widely sympatric, and field experiments strongly suggest reproductive isolation created by differences in songs. Relationships of the two to congeners uncertain; they differ vocally from all others. Monotypic.

**Distribution.** E Ecuador (R Napo), NE Peru (R Amazon, lower R Ucayali), SW Amazonian Brazil (R Amazon E locally to R Negro, also R Juruá, R Purus, upper R Madeira) and extreme NE Bolivia (lower R Beni in Pando).



**Descriptive notes.** 13-14 cm; 17-21 g. Has dull buff supercilium, dark brownish lores and postocular stripe, vaguely flammulated auriculars; forecrown cinnamon-brown, blending to reddish-rufous crown and upperparts, including wings and tail; graduated tail, pointed rectrices with shafts stiffened at base; throat whitish, breast indistinctly streaked whitish and pale dull brownish, blending to slightly darker belly; flanks and undertail-coverts browner; iris brown to chestnut; upper mandible black to dark grey, lower mandible greyish-white to pinkish; tarsus and toes greyish-green to olive. Distinguished from very

similar *C. vulpina* mainly by paler breast. Sexes alike. Juvenile has duller crown. **VOICE.** Song an accelerating and descending series of nasal "tew" notes that ends in chortling trill, variable in length; also as duet. Call described as "chut-chut", sometimes repeated, higher and thinner than comparable calls of *C. vulpina*.

**Habitat.** River-island scrub; early-successional scrub on young to medium-aged river islands, from *Tessaria* scrub to *Cecropia* woodland, locally ranging into taller woodland; in some areas always with *Gynierium sagittatum* present; in others found in mature stands of *Alchornea castaneifolia* (Euphorbiaceae). At 150-300 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs, from undergrowth up to subcanopy. Gleans items from stems, bark crevices and holes on small branches, leaf bases and foliage, and from debris deposited in vegetation by flooding; occasionally hangs upside-down.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout range. Linear nature of habitat naturally makes global population rather small.

**Bibliography.** Cohn-Haft (2003a), Cory & Hellmayr (1925), García *et al.* (1999), Gyldestolpe (1945a), Parker *et al.* (1982), Pinto (1978), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rosenberg, G.H. (1990), Wetmore (1957), Zimmer (1997).

## 109. Sulphur-throated Spinetail *Cranioleuca sulphurifera*

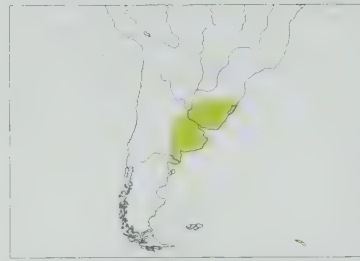
**French:** Synallaxe soufré **German:** Flügelspiegel-Riedschlüpfer **Spanish:** Curutié Ocráceo  
**Other common names:** Sulphur-bearded Spinetail

**Taxonomy.** *Synallaxis sulphurifera* Burmeister, 1869, near Buenos Aires, Argentina.

Distinctive species; relationships within genus uncertain. Monotypic.

**Distribution.** E. Argentina (SE Córdoba, S Santa Fe and S Corrientes) to E Rio Negro and S Buenos Aires), extreme S Brazil (Rio Grande do Sul) and Uruguay.

**Descriptive notes.** 15-16 cm; 12-14 g. Distinctive *Cranioleuca* with yellow throat patch. Has buffish-white supercilium, rest of face whitish with greyish streaks; crown and upperparts olive-brown; rufous greater and median wing-coverts contrasting with dark fuscous primary coverts and secondaries, and with rich tawny bases of outer primaries; tail graduated, rectrices stiffened basally, somewhat disintegrated distally (especially elongated central pair) and sharply pointed, giving strongly forked appearance, central feathers brownish, outer more rufous; chin and centre of throat yellow; breast



whitish with fine greyish streaks, belly whitish, flanks and undertail-coverts tawny-buff; iris whitish-red to orange-pink; upper mandible blackish-brown to black, lower mandible pinkish-white to whitish; tarsus and toes greenish-grey to pale olive-green. Sexes alike. Juvenile has darker upperparts, ochraceous underparts, lacks yellow throat feathers, no streaks on breast.

**VOICE.** Song a slightly rising trill c. 2.5-3.5 seconds long, followed by rapid series of harsh notes that fade towards end, "d-d-d-r-r-i-i", dirip, dirip, dirip, drip-drip-dreeuw-dreeuw", sometimes followed by upslurred trill; partners duet.

**Habitat.** Freshwater marshes with tall emergent vegetation, ranging into adjacent scrub; to 300 m.

**Food and Feeding.** Little known. Diet probably arthropods. Occurs mostly singly or in pairs; three birds observed to take small insects from *Baccharis salicifolia* stems in Argentina.

**Breeding.** Season during austral spring-summer; eggs in Oct-Dec and nestlings in Nov. Presumably monogamous. Nest an oval mass c. 15-20 × 10-15 cm, mainly of reed fragments with other plant material incorporated, interior lined with grasses and feathers, attached to or supported from below by stems (e.g. of *Scirpus, Spartina*), 0.4-1.6 m above water in emergent vegetation, occasionally above mud or drier ground. Clutch usually 3 eggs, sometimes 2 or 4.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common; rare in S of range. Occurs in Costanera Sur Ecological Reserve and Ingeniero Otamendi Reserve, in Argentina. Restriction to wetlands makes it susceptible to the usual suite of conservation problems that afflict wetland species.

**Bibliography.** Belton (1984), Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Cuervo (1985), García *et al.* (1999), López *et al.* (1999), Mauricio & Bencke (2000), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas & Bó (1988), Norez & Yzurieta (1979b), Norez *et al.* (1983), Olrog (1963a), de la Peña (1987, 1988, 1997), Pinto (1978), Ridgely & Tudor (1994), Sick (1993, 1997), Stotz *et al.* (1996), Tittarelli (2002), Willis (1992b), Wetmore (1926).

## 110. Crested Spinetail *Cranioleuca subcristata*

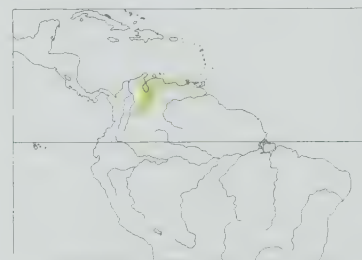
**French:** Synallaxe huppé **German:** Strichelscheitel-Baumschlüpfer **Spanish:** Curutié Copetón

**Taxonomy.** *Synallaxis subcristata* P. L. Slater, 1874, near Caracas, Venezuela.

Considered by some authors to be closely related to, or even to form a superspecies with, *C. pyrrhophia* because of shared plumage feature; others expand this superspecies to include also *C. henricae*, *C. obsoleta*, *C. pallida*, *C. albicapilla*, *C. antisiensis* and *C. baroni*, but genetic data indicate that at least the last two of those are not part of this lineage. Race *fuscivertex* described from only 2 specimens, poorly known; further research desirable. Two subspecies recognized.

**Subspecies and Distribution.**

*C. s. subcristata* (P. L. Slater, 1874) - N Venezuela (Maracaibo Basin, Sierra de San Luis in Falcón, E slope from Lara S to Barinas, mountains from Yaracuy E to Miranda, Cerro Platillón on Arauca-Guárico border, and mountains of NE Anzoátegui, Sucre and N Monagas) and NE Colombia (E slope of E Andes in Norte de Santander S to S Boyacá, and adjacent lowlands of R Arauca and R Casanare). *C. s. fuscivertex* Phelps, Sr. & Phelps, Jr., 1955 - E slope of Andes in W Venezuela (S Táchira, W Apure).



**Descriptive notes.** 14-15 cm; 14 g. Rather long-billed *Cranioleuca* with very slight crest. Has inconspicuous whitish-brown supercilium, dull brownish face, vaguely flammulated auriculars; crown indistinctly striped dark brown and pale brown, feathers elongated to form slight crest (barely, if at all, visible in field); upperparts brown; wings mainly dark rufous, tips of remiges dark fuscous; tail graduated, rectrices with stiffened shafts, mainly at base, and pointed tips, dark rufous; chin whitish-buff, blending to uniform dull tawny-brownish underparts; iris chestnut to cream (source of variation unknown); upper mandible

brownish-flesh, lower mandible dull yellowish to pinkish; tarsus and toes dull yellowish-flesh to greenish-yellow. Sexes alike. Juvenile is greyer, more mottled below, lacks pointed tips of crown feathers, side of crown tinged rufescent. Race *fuscivertex* has more prominent and blacker stripes on head. **VOICE.** Song 3 high, shrill notes followed by chatter descending trill, "pzeep, pzeep, pzeep, pee-pee-e-e-e", lasts 1.5-2 seconds; call a sharp "tsink"; also low rattle.

**Habitat.** Primarily montane evergreen forest; tropical lowland evergreen forest locally, mainly in Maracaibo Basin (Venezuela). Inhabits forest and woodland, extending locally to tall second growth and plantations, in both humid and semi-humid regions. At 50-1950 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs, often in mixed-species flocks, from mid-storey up to subcanopy. Hitches and climbs along small branches; acrobatically gleans items from bark and debris.

**Breeding.** Season Jan-Jun in N Venezuela. Presumably monogamous. Nest a globular mass of mainly grass, entrance hole near bottom, suspended from end of branch. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common in much of range; rather uncommon and local in Andes. Occurs in Henri Pittier, Macarao and Guaramacal National Parks, in Venezuela.

**Bibliography.** Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), García *et al.* (1999), Hilty (2003a), Hilty & Brown (1986), Majer & Fjeldså (1997), Phelps & Phelps (1955), Remsen (2003a), Ridgely & Tudor (1994), Rodner *et al.* (2000), Schäfer & Phelps (1954), Stotz *et al.* (1996), Vuilleumier (1980a).

## 111. Stripe-crowned Spinetail *Cranioleuca pyrrhophia*

**French:** Synallaxe à calotte rayée

**German:** Streifenscheitel-Baumschlüpfer

**Spanish:** Curutié Ventri blanco



**Taxonomy.** *Dendrocopos pyrrhophius* Vieillot, 1818, Paraguay.

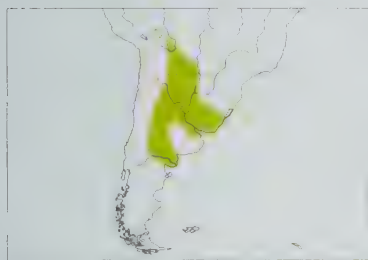
Genetic data indicate that this is sister-species to *C. henricae*. Closely related also to *C. obsoleta*, which suggested by some as race of present species; varying degrees of similarity between them in SE Brazil, Uruguay and NE Argentina demonstrated in recent study as indicative possibly of past or current hybridization or perhaps independent variation; further study needed. All three considered by some to form a superspecies that also includes *C. subcristata*, *C. pallida*, *C. albicapilla*, *C. antisiensis* and *C. baroni*, but genetic data suggest that at least the last two of those are not part of this lineage. Geographical variation clearly more complex than indicated by current taxonomy, but may be largely clinal, plumage becoming more greyish above and more whitish below towards S; within populations assigned to nominate race, variation in crown streaking evidently great, with streaking reduced in SE Brazil but many birds elsewhere at least as streaked as *striaticeps*, and those from lowland S Bolivia closer in appearance to nearby montane population of that race but having undertail-coverts like nominate. Further study needed. Three subspecies recognized.

**Subspecies and Distribution.**

*C. p. rufipennis* (P. L. Selater & Salvin, 1879) - N Bolivian Andes in La Paz (Tiltilo) and NW Cochabamba.

*C. p. striaticeps* (d'Orbigny & Lafresnaye, 1837) - Andes of C & S Bolivia (C Cochabamba, W Santa Cruz, Chuquisaca, Tarija).

*C. p. pyrrhophia* (Vieillot, 1818) - S Bolivia (lowland Santa Cruz and Tarija), W Paraguay, NE & C Argentina (S to Neuquén, Rio Negro and N Buenos Aires), extreme SE Brazil (S Rio Grande do Sul) and Uruguay.



**Descriptive notes.** 13-16 cm; 10-16 g. Rather small *Cranioleuca* with distinctive crown and tail patterns. Nominative race has broad white supercilium, dark brownish lores and post-ocular area, rest of auriculars whitish mixed with brown; most of crown boldly striped with blackish and buffy brown (streaking reduced in S Brazil and Uruguay), blending to plain greyish-brown hindcrown and back (brownish in lowland S Bolivia); rump and uppertail-coverts brownish; wing-coverts mainly rufous, dark brown primary coverts, dull brownish remiges; tail graduated, rectrices stiffened basally, very pointed at tips, outer webs much narrower than

inner ones, producing forked appearance, central feathers mostly dull dark brown or mostly rufous with dark brown inner webs, next two pairs mostly rufous with varying amounts of dark brown along shafts and at tip, outer feathers rufous; throat whitish, blending to very pale brownish-grey or buffish-grey breast and to darker belly (breast and belly paler in lowland S Bolivia), browner

flanks and undertail-coverts; iris dark red to pale orange to dark brown (source of variation unknown); upper mandible black to grey, lower mandible pinkish-horn to pinkish with dark tip; tarsus and toes olive-green to greenish-grey or yellowish-brown. Sexes alike. Juvenile has uniform crown feathers rounded at tips, darker underparts variably mottled or faintly scaled. Race *striaticeps* has generally more extensive crown streaking, slightly browner back, deep rufous uppertail-coverts and central rectrices, paler and less greyish-tinged breast and belly, rufescent tinge on undertail-coverts; *rufipennis* is like previous, but crown streaks narrower and more sharply defined, back browner, outer webs of secondaries rufous. **VOICE.** Song an accelerating, descending trill without introductory notes, c. 1.5-2.5 seconds long; also longer song, 4-12 seconds, few widely spaced metallic "tick" notes followed by rapid series of high, descending, bubbly, clicking "chack" notes, often as duet; also similar, much softer trill, and various other vocalizations. Call described as soft, metallic "tck" or rapid "tidrit".

**Habitat.** Tropical deciduous forest, gallery forest, arid montane scrub, second-growth scrub; variety of woodland types, from semi-humid deciduous to arid Chaco scrub, and low second growth; *Alnus* and *Podocarpus* woodland in Andes. From near sea-level to 3100 m.

**Food and Feeding.** Arthropods; recorded items are ants (*Pheidole*) and Coleoptera (Hydrophilidae). Forages singly or in pairs, often in mixed-species flocks, from near ground up to canopy. Hitches and climbs along small branches, occasionally hanging acrobatically upside-down and even climbing downwards; gleans items from bark, lichens, mosses and epiphytes.

**Breeding.** Season during austral spring-summer; in Argentina, eggs in Oct-Dec, and nestlings in Oct-Nov in W, Dec in E and Feb in NW; nestlings in Oct in S Brazil. Presumably monogamous. Nest an oval mass c. 13-20 cm in diameter, 15-25 cm in height, mainly of sticks, sometimes thorny ones, with other plant material, hair and feathers incorporated, or (in E populations) largely of softer plant materials (especially *Tillandsia usneoides*), entrance hole (sometimes two, possibly only dormitory nests) on side above or below centre, interior lined with soft plant material and feathers; placed 2-5 m up in crotch of small tree or bush, or possibly occasionally suspended from branch. Clutch 2-3 eggs; nestling period 13-15 days.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common in much of its large range; uncommon in Paraguay. Tolerant of habitat disturbance; often present in areas with only small patches of habitat remaining, including mere thickets and hedgerows in agricultural regions. Race *rufipennis* known from only three localities (one of which is N of range of *C. henricae*); has not been definitely recorded for at least 50 years, and may be endangered.

**Bibliography.** Belton (1984), Canevari *et al.* (1991), Chebez *et al.* (1999), Claramunt (2002, 2003), Cory & Hellmayr (1925), Cuervo (1985), Fiora (1933), Fjeldså & Krabbe (1989, 1990), Fjeldså & Majer (1996), Fraga & Narosky (1985), Garcia *et al.* (1999), Guerrero & Arambiza (2001), Hayes (1995), Krabbe *et al.* (1996), Kratter *et al.* (1993), Majer & Fjeldså (1997), Mazar Barnett & Pearman (2001), Mezquida (2001b), Narosky *et al.* (1983), Norez *et al.* (1983), Ochoa (1971), Olrog (1963a), Parker, Gentry *et al.* (1993), de la Peña (1987, 1988, 1997), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Salvador (1988), Schmitt *et al.* (1997), Short (1975), Sick (1993, 1997), Smyth (1928), Stotz *et al.* (1996), Wetmore (1926), Zotta (1936).







## 112. Bolivian Spinetail

### *Cranioleuca henricae*

**French:** Synallaxe d'Inquisivi **German:** La Paz-Baumschlüpfer **Spanish:** Curutié Boliviano

**Taxonomy.** *Cranioleuca henricae* Maijer and Fjeldså, 1997, 3 km north of Inquisivi, 2350 m, La Paz, Bolivia.

Genetic data indicate that this is sister-species to *C. pyrrhophia*; the two are considered by some to form a superspecies that also includes *C. subcristata*, *C. obsoleta*, *C. pallida*, *C. albicapilla*, *C. antisiensis* and *C. baroni*, but genetic data suggest that at least the last two of those are not part of this lineage. Monotypic.

**Distribution.** R Cotacajes drainage in La Paz (sight records also from R Consata drainage) and Cochabamba, in C Bolivia.



**Descriptive notes.** 14-15 cm. Has whitish lores, black patch in front of eye, white supercilium, vague dull fuscous postocular band; rest of face greyish-brown with faint buff streaks; forehead blackish with thin rufous streaks, crown rufous, some thin dark streaks extending to anterior crown; back brownish-olive, becoming more tawny on rump and more rufescent on uppertail-coverts; wings mostly rufous-chestnut; tail graduated, rectrices with stiffened shafts at base, distal 1-2 mm devoid of barbs and giving "spiked" appearance, rufous-chestnut; throat whitish or dingy white; underparts pale greyish-olive, darker on

undertail-coverts; iris warm brown; bill pinkish, sooty culmen and tip of lower mandible; tarsus and toes olive-yellow. Sexes alike. Juvenile undescribed. **Voice.** Most frequent song a bouncy, accelerating and descending series of sharp notes, sometimes ending in short trilled "trrrrr", lasts c. 1.5-2 seconds, sometimes to 4 seconds, often repeated at short intervals; also longer, more irregular song, 3.5-14 seconds, going up and down in pitch but tending to descend overall, often as duet. Call a rich churring "t-t-t" or "titttt", repeated.

**Habitat.** Montane deciduous woodland and scrub; inhabits woodland dominated by *Schinus molle*, *Schinopsis haenkeana* and *Ceiba mandonii*; also *Prosopis*, *Aspidosperma*, and columnar cacti (*Cereus*, *Samaipaticereus*); also ranges into adjacent low brush. At 1800-2500 m, possibly to 3300 m.

**Food and Feeding.** Arthropods. Usually seen in pairs; joins mixed-species flocks occasionally to regularly, especially in dry season. Forages from understorey to subcanopy. Hitches along small branches, mainly 1-4 m up; acrobatically gleans food items from bark and foliage.

**Breeding.** No information. Possible juvenile observed in Jan.

**Movements.** Resident.

**Status and Conservation.** **ENDANGERED.** Common within tiny range of c. 3000 km<sup>2</sup>. Population estimated at c. 1000-2500 individuals; declining as a result of habitat destruction. All suitable habitat within the species' known range degraded or threatened to varying degrees by overgrazing and by clearance for agriculture; intensive human use of dry valleys for centuries has undoubtedly dramatically reduced extent of woodland. Stronghold of population near Inquisivi, in La Paz, currently threatened by landslides resulting from erosion caused by changes in local hydrology; these changes due to extensive planting with eucalyptus (*Eucalyptus*). Surveys required in order to determine its precise distribution; conservation initiatives needed include action to prevent continued landslides, and encouragement of traditional methods of land use whereby natural woodland not destroyed.

**Bibliography.** García *et al.* (1999), Herzog, Fjeldså *et al.* (1999), Herzog, Kessler *et al.* (1997), Lowen & Kennedy (1999), Maijer (1999), Maijer & Fjeldså (1997), Ridgely & Tudor (1994), Stattersfield & Capper (2000).

## 113. Olive Spinetail

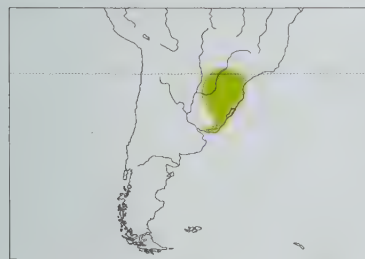
### *Cranioleuca obsoleta*

**French:** Synallaxe olive **German:** Braunoliv-Baumschlüpfer **Spanish:** Curutié Oliváceo  
**Other common names:** Red-tailed Spinetail

**Taxonomy.** *Leptoxyrura obsoleta* Reichenbach, 1853, Brazil.

Closely related to *C. pyrrhophia*, and suggested by some as being conspecific; varying degrees of similarity between them in SE Brazil, Uruguay and NE Argentina demonstrated in recent study as indicative possibly of past or current hybridization or perhaps independent variation; further study needed. Both considered by some to form a superspecies that also includes *C. subcristata*, *C. henricae*, *C. pallida*, *C. albicapilla*, *C. antisiensis* and *C. baroni*, but genetic data suggest that at least the last two of those are not part of this lineage. Proposed race *siemradskii* (Paraná, in Brazil) regarded as indistinguishable. Monotypic.

**Distribution.** E Paraguay, SE Brazil (S São Paulo S to S Rio Grande do Sul), NE Argentina (Misiones, N Corrientes) and E & S Uruguay.



**Descriptive notes.** 13-15 cm; 12-16 g. Small, short-billed, relatively dull *Cranioleuca* with plain brown crown. Has whitish supercilium, dull brown postocular band, with auriculars and moustachial region vaguely flammulated dull buff and brown, malar area plain dull buff; forehead vaguely flammulated brown and buff, blending to dull brownish-olive crown, slightly richer brown back and rump; dark chestnut-rufous wing-coverts, dull dark brown primary coverts, warm brown remiges; tail graduated, rectrices with stiffened shafts at base, devoid of barbs for distal 1-2 mm, giving "spiny" appearance, chestnut-rufous; throat whitish,

breast buffy brownish, blending to pale olive-buff belly, darker flanks and undertail-coverts; iris

dull red to orange to nearly whitish (source of variation unknown); upper mandible black to dark brownish, lower mandible pinkish, bluish-grey or whitish with dark tip; tarsus and toes greyish-olive to olive-green. Sexes alike. Juvenile has darker upperparts, variable amount of dark sealing on underparts, especially breast. **Voice.** Song a fast, accelerating series of high-pitched "psee" notes that gradually descend and end in trill, described as virtually identical to that of *C. pyrrhophia* where they meet in SE Brazil (Rio Grande do Sul); calls described as "tst" and short, hard trill.

**Habitat.** Humid forest and second growth, including *Araucaria* woodland; from near sea-level to 1000 m.

**Food and Feeding.** Arthropods. Usually in pairs, often with mixed-species flocks. Forages primarily in mid-storey, occasionally up to canopy. Hitches along branches and small trunks; often uses tail for support, especially when ascending vertical trunks and branches. Acrobatically gleans items from moss, epiphytes and bark.

**Breeding.** Little known. Season presumed to be during austral spring-summer; eggs in Oct. Presumably monogamous. Nest a slanted, oblong mass, possibly of moss, entrance hole near top of lower side. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Generally fairly common to common; rare in Paraguay. In Brazil, uncommon in Iguaçu National Park and common in Aparados da Serra National Park. Occurs in San Rafael National Park, in Paraguay. Has relatively small range, within which extensive deforestation has dramatically reduced total area of its habitat.

**Bibliography.** dos Anjos & Boçon (1999), dos Anjos *et al.* (1997), Anon. (2003d), Belton (1984), Brooks *et al.* (1993), Canevari *et al.* (1991), Chebez *et al.* (1999), Claramunt (2002), Cordeiro (2001), Cory & Hellmayr (1925), Fjeldså & Maijer (1996), Fraga & Narosky (1985), García *et al.* (1999), Hayes (1995), Lowen, Bartrina, Clay & Tobias (1996), Madroño, Clay *et al.* (1997), Mazar Barnett & Pearson (2001), Narosky *et al.* (1983), Navas & Bó (1988), Olrog (1963a), Parker & Goerck (1997), de la Peña (1988), Pinto (1978), Ridgely & Tudor (1994), Sick (1993, 1997), Silva (1997), Stotz *et al.* (1996), Straube & Bornschein (1991b).

## 114. Pallid Spinetail

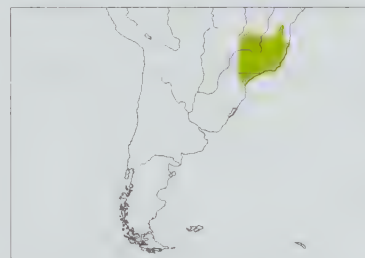
### *Cranioleuca pallida*

**French:** Synallaxe pâle **German:** Minas Gerais-Baumschlüpfer **Spanish:** Curutié Pálido

**Taxonomy.** *Synallaxis pallidus* Wied, 1831, Campos Geraes = southern Minas Gerais, Brazil.

Possible relationship to the *C. curtata* superspecies proposed by some authors on basis of plumage, vocalizations and montane distribution. Others suggest that it is part of a superspecies that includes *C. subcristata*, *C. pyrrhophia*, *C. henricae*, *C. obsoleta*, *C. albicapilla*, *C. antisiensis* and *C. baroni*, but genetic data suggest that at least the last two of those are not part of this lineage. Monotypic.

**Distribution.** SE Brazil, from C Minas Gerais and SE Bahia S to E Paraná.



**Descriptive notes.** 14-15 cm; 11-12 g. A *Cranioleuca* with colour pattern superficially like that of *Synallaxis*. Has prominent whitish supercilium, blackish spot in front of eye, dark brown postocular band, mainly buffy auriculars faintly flammulated with dark brownish; forehead streaked blackish and buff, central crown rather dark rufous, nape drab grey, blending to tawny-olive or olive-brown on hindneck to rump; rufous greater and median wing-coverts, dull dark brown primary coverts, pale cinnamon-tawny to rather pale warm olive-tawny remiges; tail graduated, rectrices with stiffened shafts, primarily at base, distal 1-5 mm devoid

of barbs or nearly so, giving very "spiked" appearance, dark rufous; chin buffy whitish, blending to bright buffy brownish-olive throat and breast, then to duller pale brownish-olive belly, slightly darker flanks and undertail-coverts; iris reddish-brown to pale brown; upper mandible black to dusky horn, lower mandible pinkish with dusky tip; tarsus and toes greenish-olive or grey with bluish and greenish-yellow tones. Sexes alike. Juvenile is darker on back, lacks rufous crown, has underparts tinged ochraceous, variable degree of dark mottling on breast. **Voice.** Song an accelerating series of clear whistled "psi" terminating in rolled "psrrrrr", sometimes repeated, and sometimes mixed with more melodious notes; call described as "tééé-ssik, tséé-ssik".

**Habitat.** Montane evergreen forest; also woodland, and tall second growth; 700-2150 m.

**Food and Feeding.** Arthropods. Forages most often in pairs, usually in mixed-species flocks, from mid-storey up to canopy. Hitches along small branches, often hanging upside-down acrobatically; gleans items from vine foliage, dead leaves, bark and debris.

**Breeding.** Season presumed to be during austral spring-summer. Presumably monogamous. Nest a globular mass of mainly lichen and moss, entrance towards lower side, bending tunnel leading upwards to small, unlined nest-chamber, placed against trunk of tree or on upper surface of branch in clumps of epiphytic vegetation. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common. Fairly common in Itatiaia National Park and uncommon in Augusto Ruschi Biological Reserve; occurs also in Serra dos Órgãos National Park. Extensive deforestation within its relatively small range has dramatically reduced available habitat.

**Bibliography.** Aleixo & Galetti (1997), dos Anjos & Boçon (1999), dos Anjos *et al.* (1997), Avanzo & Sanfilippo (2000), Cordeiro (2001), Cory & Hellmayr (1925), Dunning (1993), Ferreira de Vasconcelos & Melo-Júnior (2001), García *et al.* (1999), Gonzaga *et al.* (1995), Ihering (1914), Mitchell (1957), Pacheco *et al.* (1996a), Parker & Goerck (1997), Pinto (1978), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993, 1997), Stotz *et al.* (1996), Willis & Oniki (1991).

## 115. Grey-headed Spinetail

### *Cranioleuca semicinerea*

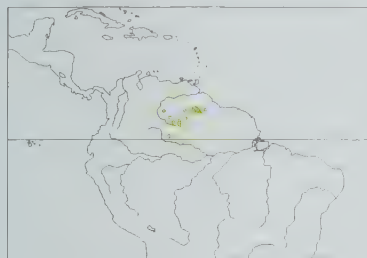
**French:** Synallaxe à tête grise **German:** Graukopf-Baumschlüpfer **Spanish:** Curutié Cabecigrís  
**Other common names:** Pale-headed Spinetail

On following pages: 116. Creamy-crested Spinetail (*Cranioleuca albicapilla*); 117. Red-faced Spinetail (*Cranioleuca erythrops*); 118. Tepui Spinetail (*Cranioleuca demissa*); 119. Streak-capped Spinetail (*Cranioleuca hellmayri*); 120. Ash-browed Spinetail (*Cranioleuca curtata*); 121. Line-checked Spinetail (*Cranioleuca antisiensis*); 122. Baron's Spinetail (*Cranioleuca baroni*); 123. Speckled Spinetail (*Cranioleuca gutturata*); 124. Scaled Spinetail (*Cranioleuca muelleri*); 125. Yellow-chinned Spinetail (*Certhiaxis cinnamomeus*); 126. Red-and-white Spinetail (*Certhiaxis mustelinus*).









suffusion, crown reddish-chestnut, back rich brown, becoming increasingly rufescent towards uppertail-coverts; wings reddish-chestnut, remiges slightly paler and with dark fuscous tips; tail graduated, rectrices with stiffened shafts (primarily basally), pointed tips, distal 1-2 mm sometimes without barbs (possibly through wear), dark reddish-chestnut; chin and throat whitish, underparts grey, flanks slightly browner; iris chestnut; upper mandible dusky brown to black, lower mandible pinkish-horn with dark tip; tarsus and toes olive-yellow to olive-brown. Distinguished from very similar *C. curtata* mainly

by much greyer underparts. Sexes alike. Juvenile lacks rufous on crown, has back more olivaceous brown, underparts more ochraceous. Race *cardonai* described as differing from nominate in having underparts olivaceous brown, rather than greyish, and supercilium and auriculars also more olivaceous. VOICE. Song a thin, descending, accelerating series, "tée-tée-te-ti ti' ti' ti' ti' ti' ti' ti' i", alarm a rattle.

**Habitat.** Montane evergreen forest; also gallery forest locally in Bolivar (Gran Sabana); 1100-2450 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs, usually in mixed-species flocks, from mid-storey to canopy. Hitches and climbs along small branches and through vines; acrobatically gleans items from bark and debris.

**Breeding.** Nest a globular mass of moss, partially suspended from branch. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Tepuis EBA. Fairly common within its limited range.

**Bibliography.** Anon. (2003d), Barnett *et al.* (2002), Chapman (1931), García *et al.* (1999), Hilty (2003a), Mayr & Phelps (1967, 1971), Phelps & Dickerman (1980), Pinto (1978), Renjifo *et al.* (1997), Ridgely & Tudor (1994), Rodner *et al.* (2000), Sick (1993, 1997), Snyder (1966), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Thomas (1990), Vaurie (1971d), Willard *et al.* (1991).

## 119. Streak-capped Spinetail

### *Cranioleuca hellmayri*

**French:** Synallaxe des broméliades

**German:** Santa Marta-Baumschlüpfer

**Spanish:** Curutié de Santa Marta

**Taxonomy.** *Siptornis hellmayri* Bangs, 1907, Páramo de Macotama, 11,000 feet [c. 3350 m], Sierra Nevada de Santa Marta, Colombia.

Forms a superspecies with *C. erythrops*, *C. demissa*, *C. curtata*, *C. antisimensis* and *C. baroni*; all share plumage similarities and mostly lower montane distribution, and their close relationship is consistent with recent genetic data. Some authors have proposed that it is more closely related to *C. suberistata* and *C. pyrrhophia*, because of streaked crown. Monotypic.

**Distribution.** Santa Marta Mts of N Colombia; one specimen from extreme NW Venezuela (Perijá Mts).



**Descriptive notes.** 14-15 cm; 14-16 g. Has narrow whitish supercilium; rest of face flammulated dark brownish and buff; crown reddish-chestnut with blackish streaks, hindcrown to back brown, blending to paler rump, uppertail-coverts tawny rufescent; wings mostly reddish-chestnut, remiges with slightly duller edges and dark fuscous tips; tail graduated, rectrices with shafts stiffened basally, tips pointed, reddish-chestnut; chin whitish, blending to pale brownish-grey or greyish-olive breast and belly, flanks and undertail-coverts slightly deeper and browner in colour; iris pale yellow to whitish; upper mandible blackish to

grey, lower mandible pinkish-horn to pinkish; tarsus and toes yellowish-green to flesh-coloured. Sexes alike. Juvenile undescribed. Differs from *C. curtata* mainly in streaking on crown and face. VOICE. Song not fully described, reported as similar to that of *C. curtata*; call a weak, high-pitched, squeaky trill, "ti, ti, ti, t-t-t-t".

**Habitat.** Montane evergreen forest and secondary forest; 1520-3000 m.

**Food and Feeding.** Arthropods. Forages mostly in pairs, usually in mixed-species flocks, from mid-storey up to subcanopy. Hitches along small branches; acrobatically gleans food items from bark, epiphytes (including bromeliads) and debris.

**Breeding.** Eggs in Sept-Nov. Presumably monogamous. Nest a ball of grass and leaves hanging from branch. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Santa Marta Mountains EBA. Common within limited geographical range. Status in Venezuela uncertain; the single record, of a female at R Palmer (Sierra de Perijá), was at 700 m, well below the elevational range within which the species occurs in Colombia.

**Bibliography.** Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), García *et al.* (1999), Hilty (2003a), Hilty & Brown (1986), Orejuela (1985), Remsen (2003a), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vuilleumier (1980a).

## 120. Ash-browed Spinetail

### *Cranioleuca curtata*

**French:** Synallaxe à sourcils gris

**German:** Graubrauen-Baumschlüpfer

**Spanish:** Curutié Cejigris

**Other common names:** Fork-tailed Spinetail ("C. *furcata*")

**Taxonomy.** *Synallaxis curtata* P. L. Slater, 1870, "Bogotá".

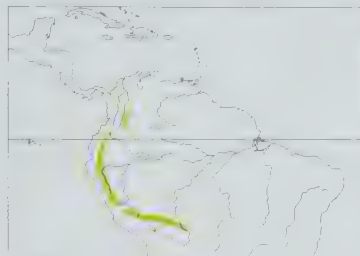
Considered conspecific with *C. demissa* by some authors. The two are part of a superspecies that also includes *C. erythrops*, *C. hellmayri*, *C. antisimensis* and *C. baroni*; all share plumage similarities and mostly lower montane distribution, and their close relationship is consistent with recent

genetic data. Named taxon *furcata*, described (from N Peru) as a separate species, has been shown to be referable to immature plumage of present species. Race *cisandina* was formerly considered a separate species; proposed race *griseipsectus*, from E Ecuador, considered indistinguishable from latter. Three subspecies recognized.

**Subspecies and Distribution.**

*C. c. curtata* (P. L. Slater, 1870) - E Andes of Colombia (W slope from SE Santander S to Huila). *C. c. cisandina* (Taczanowski, 1882) - E Andes of S Colombia (S from W Caquetá), E Ecuador and N Peru (S at least to Pasco).

*C. c. debilis* (Berlepsch & Stolzmann, 1906) - Andes from C Peru (S from Ayacucho and Cuzco) S to C Bolivia (S to W Santa Cruz).



**Descriptive notes.** 14-15 cm; 14-21 g. Rather dark *Cranioleuca*. Nominative race has variable pale supercilium, from almost whitish and conspicuous to dingy grey and obscure; rest of face dull brownish, faint pale shaft streaks on auriculars; forehead brown with variable amount of reddish-chestnut suffusion, crown reddish-chestnut; back rich brown, becoming increasingly reddish towards uppertail-coverts; wings reddish-chestnut, with remiges slightly paler and with dark fuscous tips; tail graduated, rectrices with stiffened shafts primarily towards base, pointed tips, distal 1-2 mm sometimes without barbs (possibly through abra-

sion), dark reddish-chestnut; chin very pale dull brownish-grey, blending to browner throat with hint of streaking, then to dull brownish underparts, slightly richer brown on flanks; iris chestnut to brown (but field observations suggest that iris possibly white in nominate race); upper mandible dark brown to blackish, lower mandible pinkish with usually dark tip; tarsus and toes olive-greenish to mustard-yellow. Distinguished from very similar *C. demissa* mainly by much browner, less grey, underparts. Sexes alike; potential difference in extent of chestnut on forehead (male tends to have more, but sample size small) requires investigation. Juvenile has strong supercilium, crown like back but mixed with chestnut, rarely completely chestnut (variation evidently responsible for naming "*furcata*"), underparts below chin entirely ochraceous rufous. Race *cisandina* has crown, wings and tail darker, more chestnut, back darker brown, breast with darker greyish tones; *debilis* is like previous, but crown and back slightly paler, underparts paler and brighter, forecrown tends to be solidly chestnut, also significantly smaller in size than equatorial populations of latter. VOICE. Song a high-pitched, accelerating, descending and fading series of shrill notes with bouncing-ball rhythm (very similar to that of *C. erythrops*), c. 2 seconds long; also longer song, c. 5 seconds, that starts more slowly. Call undescribed.

**Habitat.** Montane evergreen forest and humid lower montane forest; mainly 900-1700 m, locally down to 650 m and as high as 2500 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs, usually in mixed-species flocks, from mid-storey to canopy. Hitches along small branches, occasionally hanging upside-down acrobatically. Gleans from and probes in bark, moss, epiphytes, dead leaves and debris.

**Breeding.** Fledgling in Mar in N Ecuador. No other information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common; frequently overlooked, and possibly more common.

**Bibliography.** Bond (1945), Chapman (1926), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Foster *et al.* (1994), García *et al.* (1999), Graves (1985, 1986), Hilty & Brown (1986), Koepeke (1961b), Mayr & Phelps (1967), Parker, Castillo *et al.* (1991), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Remsen (2003a), Remsen & Ridgely (1980), Remsen & Traylor (1983, 1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Salaman *et al.* (1999), Schulenberg (2002), Stotz *et al.* (1996), Taczanowski (1884), Traylor (1958), Vaurie (1971c).

## 121. Line-cheeked Spinetail

### *Cranioleuca antisimensis*

**French:** Synallaxe grimpeur

**German:** Olivrücken-Baumschlüpfer

**Spanish:** Curutié Cariestriado

**Other common names:** Northern Line-cheeked Spinetail, Fraser's Spinetail

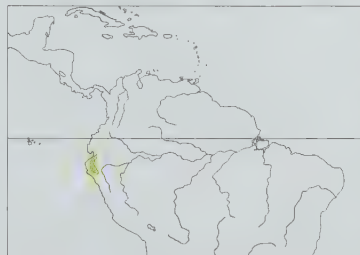
**Taxonomy.** *Synallaxis antisimensis* P. L. Slater, 1859, Cuenca, Azuay, Ecuador.

Sister-species to *C. baroni*, and very likely conspecific; although populations at extremes of ranges are clearly different, the two grade into one another in step-clinal manner, making it difficult or impossible to determine to which taxon certain populations should be assigned (see page 187), this applying also to an apparently undescribed population in Amazonas (N Peru); thorough, quantitative analysis of all parameters (including plumage, morphometrics, vocalizations, genetics) required in order to elucidate the situation with regard to geographical differentiation and speciation. Both are part of a superspecies that also includes *C. erythrops*, *C. demissa*, *C. hellmayri* and *C. curtata*; all share plumage similarities and mostly lower montane distribution, and their close relationship is consistent with recent genetic data. Some authors, however, have considered them to belong to a superspecies that also includes *C. suberistata*, *C. pyrrhophia*, *C. henricae*, *C. obsoleta*, *C. pallida* and *C. albicapilla*, but such a relationship is not supported by recent genetic findings. Two subspecies recognized.

**Subspecies and Distribution.**

*C. a. antisimensis* (P. L. Slater, 1859) - Andes of SW Ecuador (N Azuay, El Oro, Loja).

*C. a. palamblae* (Chapman, 1923) - Andes of N Peru (Piura and Cajamarca S to N Lambayeque).



**Descriptive notes.** 14-15 cm; 14-19 g. Rather typical *Cranioleuca* without distinctive features. Nominative race has whitish supercilium, broad dark brown postocular stripe; rest of face buff-brown with few faint streaks; crown dark rufous, back dull brown, blending to rufous tips of uppertail-coverts; wings mainly dark rufous, tips of remiges dull fuscous, outer primaries dull fuscous with rufous edges basally on outer webs; tail graduated, rectrices stiffened basally, pointed at tips, dark rufous; throat pale greyish-white, blending to pale buffy grey-brown on breast, becoming duller and darker on belly; flanks and undertail-coverts

washed brownish; iris chestnut to light brown; upper mandible blackish to grey, lower mandible



pinkish-grey to pinkish; tarsus and toes olive to brownish-grey. Sexes alike. Juvenile is uniform dark brown above, sometimes some rufous on forecrown, underparts variably more mottled and more buff than adult. Race *palambae* has whiter supercilium, whitish streaks on auriculars, more greyish-olive back, whiter throat, slightly greyer underparts. VOICE. Song a loud, descending and fading series of sharp notes, lasting 1-1.5 seconds, seemingly differing to a degree from that of *C. baroni*; also longer (up to 6 seconds), more irregular song, sometimes ending with series of long, loud notes. Contact call "tsi-chik".

**Habitat.** Montane evergreen forest; humid to semi-humid montane forest and second growth, also hedgerows in agricultural areas; mainly 1000-2800 m, locally down to 900 m and up to 2900 m.

**Food and Feeding.** Arthropods. Forages singly, in pairs, or in small groups, regularly with mixed-species flocks, from canopy to mid-storey. Hitches along small branches, occasionally also small tree trunks; acrobatically gleans items from epiphytes, mosses and bark.

**Breeding.** Fledglings in Aug in Ecuador. Presumably monogamous. Nest a globular mass of mainly moss, suspended from a branch. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common. Tolerates moderate anthropogenic habitat disturbance.

**Bibliography.** Chapman (1923, 1926), Cook (1996), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), García *et al.* (1999), Koepcke (1958, 1961a, 1961b, 1970), Maijer & Fjeldså (1997), Parker (1981), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Stotz *et al.* (1996), Vuilleumier (1980a).

## 122. Baron's Spinetail

### *Cranioleuca baroni*

**French:** Synallaxe de Baron **German:** Weißbrauen-Baumschläpfer **Spanish:** Curutié de Baron  
**Other common names:** Southern Line-cheeked Spinetail

**Taxonomy.** *Siptornis baroni* Salvin, 1895. Huamachuco, La Libertad, and Cajabamba, Cajamarca, Peru.

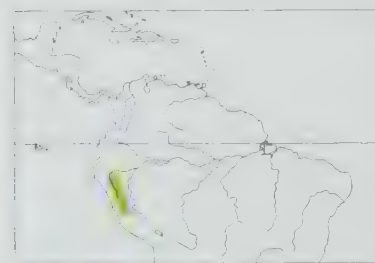
Sister-species to *C. antisensis*, and very likely conspecific; although populations at extremes of ranges are clearly different, the two grade into one another in step-clinal manner, making it difficult or impossible to determine to which taxon certain populations should be assigned (see page 187), this applying also to an apparently undescribed population in Amazonas (N Peru); thorough, quantitative analysis of all parameters (including plumage, morphometrics, vocalizations, genetics) required to elucidate the situation with regard to geographical differentiation and speciation. Both form a superspecies together with *C. erythrops*, *C. demissa*, *C. hellmayri* and *C. curtata*; all share plumage similarities and mostly lower montane distribution, and their close relationship is consistent with recent genetic data. Some authors, however, have considered them to belong to a superspecies that also includes *C. subcristata*, *C. pyrrhophia*, *C. henricae*, *C. obsoleta*, *C. pallida* and *C. albicapilla*, but such a relationship is not supported by recent genetic findings. Size variation among populations of present species substantial but somewhat irregular, correlated strongly with elevation, e.g. in Ancash birds of high elevations in N are much larger than low-elevation ones in S. Moreover, inter-locality variation is extraordinary; virtually every population sample seemingly diagnosable on basis of size and plumage characters, and many at least as distinctive as are currently accepted races. Three subspecies tentatively recognized.

**Subspecies and Distribution.**

*C. b. baroni* (Salvin, 1895) - Andes of N & C Peru (C Cajamarca and S Amazonas S to La Libertad, Ancash and WC Huánuco).

*C. b. capitalis* J. T. Zimmer, 1924 - Andes of C Peru (E Huánuco, Pasco).

*C. b. zaratensis* Koepcke, 1961 - Andes of WC Peru (Lima).



**Descriptive notes.** 15-19 cm; 19-32 g. The largest *Cranioleuca*. Nominat race has conspicuous white supercilium; rest of face dark grey-brown, variably flammulated buff-whitish; forehead a mix of reddish-brown and dark streaking that covers whitish supraloral spots, crown rufous-chestnut; back dark greyish-brown to brownish-grey or olive-grey, slightly paler on rump and uppertail-coverts; wings dark reddish-chestnut, remiges with dark dusky tips; tail graduated, rectrices with shafts stiffened basally, pointed tips, rufous-chestnut; throat and upper breast white, lower breast and sides dull brownish-grey with blurry buff-whitish streaks, which become narrow and faint on belly; flanks and undertail-coverts greyish-brown with faint pale shaft streaking; iris chestnut to greyish-brown (source of variation unknown); upper mandible black to dark grey, lower mandible pinkish to white, sometimes with dark tip; tarsus and toes olive to greyish-yellow. Sexes alike. Juvenile has supercilium greyish-buff, upperparts olive-grey with variable amount of rufous in crown, variable amount of dark scaling below, and often dusky spots on tips of central rectrices. Race *capitalis* described as having paler crown (variable, not always paler), distinct white shaft spots on sides of neck and breast, darker and greyer belly; *zaratensis* is similar to previous but much smaller, has more pointed tail feathers, central rectrices lacking barbs on distal 3-5 mm. VOICE. Song a loud, shrill descending series 1-4 seconds long, described as "quick-quick-quick-he-e-e-e-e" or "keek, kéék, kee-keekerrrrrr" with first note lower than rest, sometimes continued and repeated, reported to differ to a degree from that of *C. antisensis*. Call described as sharp, metallic "tec" or "tete".

**Habitat.** Semi-humid to semi-arid montane woodland, often with alders (*Alnus*); locally in *Polylepis* woodland. Mostly 2300-3700 m; locally down to 1700 m and up to 4500 m.

**Food and Feeding.** Arthropods; Lepidoptera larvae recorded in diet. Forages singly, in pairs, or in flocks of up to 10 individuals, occasionally with mixed-species flocks; from mid-storey to canopy. Hitches along small branches. Acrobatically gleans arthropods from epiphytes, mosses, dead leaves and bark, often in dense vegetation.

**Breeding.** Fledgling in Apr. No other information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common. No known potential threats within elevational range occupied by this species.

**Bibliography.** Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), García *et al.* (1999), Koepcke (1954, 1961b, 1970), Maijer & Fjeldså (1997), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Stotz *et al.* (1996), Zimmer (1924, 1930).

## 123. Speckled Spinetail

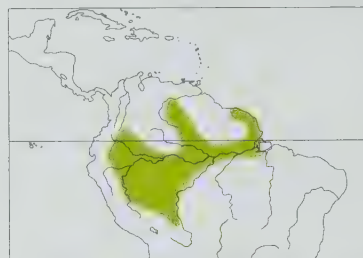
### *Cranioleuca gutturala*

**French:** Synallaxe ponctué **German:** Fleckenbrust-Baumschläpfer **Spanish:** Curutié Jaspeado  
**Other common names:** D'Orbigny's Spinetail

**Taxonomy.** *Anabates guttatus* d'Orbigny and Lafresnaye, 1838, Yuracarés (probably Cochabamba), Bolivia.

Relationships uncertain; differs vocally from other species in genus as currently defined. Possible sister-species relationship to *C. muelleri* suggested by plumage pattern. Proposed race *peruviana*, from E Peru, described as darker above, paler and less ochraceous below (including underwing-coverts), breast spotting coarser, chin paler yellow, supercilium less pronounced; these characters considered by subsequent authors to represent individual variation, although absence of buff wash on underparts thought by some to permit diagnosis; even if characters do represent geographical variation, however, specimens from C Peru seem intermediate. Further study may also demonstrate that resurrection of name *hyposticta* (type locality R Negro, opposite Boavista, in Brazil) for populations of NW Amazonia is warranted. Clearly, reanalysis of variation throughout range is required, and this may indicate that one or both are valid taxa. Tentatively treated as monotypic.

**Distribution.** SE Colombia (S from W Caquetá), S Venezuela (Amazonas, Bolívar), NE Surinam and N French Guiana S to E Ecuador, E Peru, Amazonian Brazil (W Amazonas E to Amapá, S to Acre and NC Pará) and N Bolivia (S to Cochabamba).



**Descriptive notes.** 13-15 cm; 13-17 g. The only *Cranioleuca* with spotted underparts and with rounded rectrix tips. Face and supercilium are ochraceous brown, freckled with dark brownish (especially auriculars); crown mostly dark chestnut, becoming dull dark brown on hindercrown and upper back, blending to richer brown lower back and rufescent-tinged brown rump and uppertail-coverts; wings dark chestnut, except for ochraceous bend of wing and dark fuscous tips of remiges; tail graduated, rectrices stiffened basally, tips rounded, rufous; chin dull yellow; throat and breast tawny-buff with conspicuous dark brown triangular spotting, belly, flanks and undertail-coverts with duller, fainter spots; iris pale yellowish to brown (source of variation unknown); upper mandible black to grey, lower mandible grey to blue-grey, often pinkish at base; tarsus and toes olive to brownish-yellow. Sexes alike. Juvenile lacks chestnut crown, has greyish-olive back; two different types (possibly stages) reported, one with underparts more greyish and spots paler and less distinct, the other with underparts washed ochraceous and no spots other than some dark margins on breast feathers. VOICE. Song a quavering, descending trill with introductory note, "tch-t-t-t-t-t-t-t-t", c. 2 seconds long; also a series of 5-7 very high-pitched, piercing "tsee" notes, often ending with spurts of lower sputtering trilled notes.

**Habitat.** Flooded evergreen forest and tropical lowland evergreen forest; mainly *várzea* forest and transitional forest, locally in poorly drained or streamside *terra firme* forest; usually in areas with dense vines. Mainly below 400 m, locally to 1100 m.

**Food and Feeding.** Diet consists primarily of cockroaches (Blattodea) and Heteroptera; Coleoptera and spiders also recorded. Forages singly or in pairs, usually in mixed-species flocks, from mid-storey to subcanopy. Hitches and hops along branches and small trunks; acrobatically gleans and probes for arthropods. Dead-leaf specialist; in SE Peru, 70% of foraging manoeuvres directed at dead leaves. Also obtains items from moss, epiphytes, palm fronds and debris.

**Breeding.** Nest-building in mid-Aug. in Peru. Presumably monogamous. Nest a cone-shaped mass of moss 25 cm long, tapering to entrance hole, suspended from branch. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare to fairly common; often overlooked. Occurs in Manu National Park and Biosphere Reserve, in Peru.

**Bibliography.** Angehr & Aucca (1997), Bond (1945), Chapman (1926), Cory & Hellmayr (1925), Foster *et al.* (1994), García *et al.* (1999), Gyldenstolpe (1945a, 1945b, 1951), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Meyer de Schauensee (1951), Munn (1985), Oren & Parker (1997), Parker & Bailey (1991), Parker *et al.* (1982), Remsen (2003a), Remsen & Parker (1983, 1984), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson *et al.* (1990), Rodner *et al.* (2000), Rosenberg (1997), Schulenberg *et al.* (2001), Sick (1993, 1997), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh *et al.* (1984), Tostain *et al.* (1992), Zimmer, Parker *et al.* (1997).

## 124. Scaled Spinetail

### *Cranioleuca muelleri*

**French:** Synallaxe écaillé **German:** Schuppenbauch-Baumschläpfer **Spanish:** Curutié Escamoso

**Taxonomy.** *Siptornis mülleri* Hellmayr, 1911, Fazenda Nazareth, Mexiana Island, Brazil.

Plumage pattern suggests that sister-species may be *C. gutturala*. Monotypic.

**Distribution.** R Amazon in Brazil, from extreme E Amazonas E to S Amapá and Mexiana I.



**Descriptive notes.** 14-15 cm; 14-15 g. Dark *Cranioleuca* with scaly-looking underparts, giving juvenile-like appearance. Has narrow pale supercilium, dull brownish face faintly flammulated; forehead dark brown, crown dark reddish-chestnut, back rich dark brown, rump brown; wings mostly dark reddish-chestnut; tail graduated, rectrices stiffened basally, pointed at tips, dark chestnut; chin pale greyish, faintly scaled, becoming darker and more heavily scaled on throat; breast and belly very pale buff-brown with dark brown feather tips, creating scaled appearance; flanks and undertail-coverts brown; iris brown; upper mandible blackish at base, blending to pale tip, lower mandible pale pinkish-grey with yellowish base; tarsus and toes olive-tinged yellow-green. Sexes alike. Juvenile has uniform upperparts with hint of ochraceous collar, scaling of underparts tinged ochraceous, feathers with broader dark tips. VOICE. No information.

**Habitat.** Flooded tropical evergreen forest, mainly undergrowth of *várzea* forest; 0-200 m.



**Food and Feeding.** Arthropods. Forages usually in pairs, often in mixed-species flocks, from undergrowth to mid-storey. Hitches along small branches; acrobatically gleans items from bark and debris.

**Breeding.** No information; only unconfirmed mention of nest as a globular mass of sticks and placed in tree.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Amazon Flooded Forests EBA. Poorly known species; population thought likely to be relatively small.

**Bibliography.** Cohn-Haft (2003a), Cory & Hellmayr (1925), García *et al.* (1999), Pinto (1978), Remsen (2003a), Ridgely & Tudor (1994), Sick (1993, 1997), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Whitney *et al.* (1996).

## Genus *CERTHIAXIS* Lesson, 1844

### 125. Yellow-chinned Spinetail

#### *Certhiaxis cinnamomeus*

**French:** Synallaxe à gorge jaune

**German:** Gelbkinn-Riedschlüpfer

**Spanish:** Curutié Colorado

**Other common names:** Yellow-throated Spinetail

**Taxonomy.** *Certhia cinnamomea* J. F. Gmelin, 1788, no locality = Cayenne.

Some authors include *Cranioleuca* in present genus because of general morphological similarities, but most treat them as separate genera because of differences in nest structure. Birds from NE Colombia (N Arauca) assumed to belong to race *marabinus*, and those from W part of R Amazon (E to R Negro) tentatively placed with *pallidus*; further study needed. Proposed race *albescens*, described from Carabobo, in N Venezuela, is a synonym of *valencianus*. Eight subspecies recognized.

**Subspecies and Distribution.**

*C. c. fuscifrons* (Madarász, 1913) - N Colombia (R Atrato E to base of Santa Marta Mts, also lower Cauca Valley and most of Magdalena Valley).

*C. c. marabinus* Phelps, Sr. & Phelps, Jr., 1946 - NW Venezuela (Zulia W of L Maracaibo, and W Trujillo, W Mérida and NW Táchira) and NE Colombia (N Arauca).

*C. c. valencianus* J. T. Zimmer & Phelps, Sr., 1944 - WC Venezuela (Lara, Portuguesa and Barinas E to Aragua and Guárico).

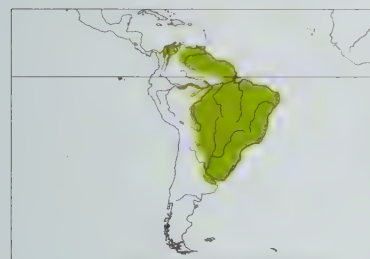
*C. c. orenocensis* J. T. Zimmer, 1935 - lower Orinoco Valley in Venezuela (S Apure, SE Guárico, N Amazonas, and N Bolívar E to S Sucre and Delta Amacuro).

*C. c. cinnamomeus* (J. F. Gmelin, 1788) - Trinidad, NE Venezuela (N Sucre, N Anzoátegui), the Guianas and NE Brazil (Pará E to N Maranhão).

*C. c. pallidus* J. T. Zimmer, 1935 - extreme SE Colombia (SE Amazonas) and W & C Amazonian Brazil (E, including lower R Negro and lower R Purús, to lower R Tocantins).

*C. c. cearensis* (Cory, 1916) - E Brazil (S Maranhão, Ceará, Piauí, Pernambuco, N Bahia).

*C. c. russeolus* (Vieillot, 1817) - E Bolivia (S from Pando), S Brazil (C Mato Grosso E to S Bahia, and S to Rio Grande do Sul), Paraguay, N Argentina (S to Salta, NE Córdoba and N Buenos Aires) and Uruguay.



**Descriptive notes.** 13-16 cm; 13-17 g. A crisply patterned spinetail mainly reddish above and whitish below. Nominative race has grey supercilium, broad dusky brown eyeline, greyish rest of face; crown reddish-brown, becoming slightly paler on back; rump paler rufescent brown, long uppertail-coverts darker and redder; wings bright rufous, dark fuscous tips of remiges; tail graduated, 12 rectrices with stiffened shafts, distal 5-10 mm nearly lacking in barbs, producing very "spiny" appearance, mostly rufous, central pair with duller brown inner webs; chin and centre of upper throat pale yellow, rest of throat white; breast and belly creamy white, sides pale grey-

brown, flanks and undertail-coverts tawny brownish; iris reddish-brown to pale orange to whitish (source of variation unknown, possibly geographical); upper mandible blackish, lower mandible uniform black to grey with black tip; tarsus and toes bluish to greyish to silvery slate. Differs from similar *C. mustelinus* mainly in having pale supercilium, yellow on throat, 12 rather than 10 rectrices. Sexes alike. Juvenile lacks yellow on chin, has darker and less rufescent upperparts, underparts occasionally faintly mottled. Race *fuscifrons* has dusky brown forehead; *marabinus* has the most reddish upperparts of any race, differs from nominate also in having dusky greyish forehead, whiter supercilium; *valencianus* differs from previous in less reddish upperparts, darker, more dusky underparts, greyish supercilium; *orenocensis* is palest, dullest, least rufescent race, with back sandy brown, contrasting with wings and crown, also dusky spot on distal portion of inner webs of central rectrices; *pallidus* is evidently like last but brighter rufescent above, and much paler throughout than nominate; *cearensis* is like previous but brighter generally, has darker sides and flanks; *russeolus* is like last, but has browner, less rufescent upperparts, more greyish flanks and undertail-coverts. **Voice.** Sings frequently; churring rattle, "chu-chu-chehechehechehe", often as duet, also described as low-pitched trill 1-2 seconds long that ascends and then fades (reminiscent of song of a *Laterallus* rail); also gives short thin trill. Call a sharp "krip" or "chip".

**Habitat.** Freshwater marshes and edge of mangrove forest; found in a variety of wetlands with mix of grass, shrubs, and emergent and floating vegetation, including on old river islands in Amazonia; also overgrown ditches. Sea-level to 500 m, locally to 750 m. Locally syntopic with *C. mustelinus*, but habitat differences between them not clear.

**Food and Feeding.** Recorded dietary items are Coleoptera, Lepidoptera larvae, Hemiptera, Odonata, Hymenoptera including ants, Orthoptera, Diptera, Isoptera, spiders and 1 crab (*Uca thayeri*). Forages singly or in pairs, usually on or within 2 m of ground, occasionally to c. 3 m. Gleans arthropods from small branches and foliage, occasionally from water or ground.

**Breeding.** Breeds throughout year in coastal Surinam, and primarily during Aug-Oct dry season in French Guiana; active nests in Apr-Oct in W Venezuela; breeding recorded Jun-Oct (Jun peak in egg dates) in Trinidad; eggs in Oct in S Brazil; eggs in Oct-Dec and nestlings in Nov-Dec in Argentina. Presumably monogamous. Nest a bulky, globular mass c. 25-40 cm long, c. 20-30 cm high, made of interwoven sticks, often thorny ones, interior curving tube c. 20-25 cm long leading vertically from top or end to nest-chamber, latter c. 10 cm in diameter, sometimes lined with soft plant material; placed low in bush or grass, usually near or over water, 0.2-1.5 m up, rarely as high as 9 m, often between roots when in mangrove forest; new nest sometimes superimposed on old one. Clutch 2-5 eggs. Nests regularly parasitized by Striped Cuckoo (*Tapera naevia*).

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Common to abundant in much of its large range. Restriction to wetlands makes it susceptible to the usual suite of conservation problems that afflict wetland species, e.g. drainage and pollution. Occurs in numerous protected areas.

**Bibliography.** Anon. (2003d), Belcher & Smooker (1936), Belton (1984), Collins & Araya (2002), Contreras (1979d), Cory & Hellmayr (1925), Cuervo (1985), Ferreira de Vasconcelos & Melo-Júnior (2001), French (1991), Gyldenstolpe (1945b, 1951), Haverschmidt & Mees (1994), Hayes (1995), Hilty (2003a), Hilty & Brown (1986), Lefebvre *et al.* (1992), Melo-Júnior *et al.* (2001), Morton (1979), Narosky *et al.* (1983), Nores & Yzurieta (1981), Nores *et al.* (1983), Parker & Goerck (1997), Parker *et al.* (1982), Parrini *et al.* (1999), de la Peña (1987, 1988), Phelps & Phelps (1946), Pinto (1978), Pinto & Camargo (1952), Remsen (2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Tudor (1994), Roda (1991), Rodner *et al.* (2000), Rosenberg, G.H. (1990), Selater (1874, 1890), Short (1975), Sick (1993, 1997), Snyder (1966), Stotz *et al.* (1996), Thomas (1990), Todd (1948b, 1950b), Todd & Carriker (1922b), Tostain *et al.* (1992), Wetmore (1926), Willis & Oniki (1990, 1991), Zimmer (1935b, 1936a), Zimmer & Phelps (1944).

### 126. Red-and-white Spinetail

#### *Certhiaxis mustelinus*

**French:** Synallaxe belette

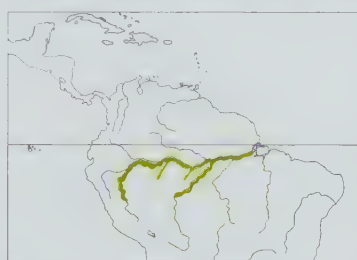
**German:** Weißbauch-Grasschlüpfers

**Spanish:** Curutié Rojiblanco

**Taxonomy.** *Synallaxis mustelina* P. L. Selater, 1874, Rio Madeira, below the mouth of the Rio dos Marmelos, Amazonas, Brazil.

Some authors include *Cranioleuca* in present genus because of general morphological similarities, but most treat them as separate genera because of differences in nest structure. Proposed race *frenatus* (from E Brazil) is not diagnosable. Monotypic.

**Distribution.** R Amazon and some major tributaries in NE Peru (S along R Ucayali), extreme SE Colombia (SE Amazonas) and Brazil (E to extreme E Pará, including lower R Juruá and lower R Purús, and S along R Madeira to near Bolivian border).



**Descriptive notes.** 14-15 cm; 14-16 g. Has black lores, dusky brown eyeline; reddish-brown face, crown and upperparts, slightly paler on back, rump paler rufescent brown; wings bright rufous, dark fuscous tips of remiges; tail graduated, 10 rectrices with stiffened shafts, distal 5-10 mm nearly lacking in barbs, producing very "spiny" appearance, mostly rufous, central pair with duller brown inner webs; chin and throat white; underparts white, belly, flanks and undertail-coverts washed pale buff; iris brown; upper mandible grey to blackish, lower mandible dark grey; tarsus and toes light grey. Differs from

similar *C. cinnamomeus* in black lores, no supercilium, no yellow on throat, 10 rather than 12 rectrices. Sexes alike. Juvenile has dusky crown, less uniformly rufous upperparts, faintly mottled breast. **Voice.** Song a short trill, rising and then falling, "ch-t-t-t-t-t-t-t-t-t-t"; call "chuk-chek" or "chuck-chuck-check", final note slightly higher-pitched.

**Habitat.** Freshwater marshes; primarily marshy sections of old river islands with mix of bushes, grass and emergent vegetation; from near sea-level to 150 m. Locally syntopic with *C. cinnamomeus*, but habitat differences between them not clear.

**Food and Feeding.** Arthropods. Forages singly or in pairs; gleans items from small branches and foliage, usually within 1 m of ground.

**Breeding.** Presumably monogamous. Nest a ball c. 40-50 cm in diameter, of thorny sticks, placed in low vegetation over water. No further information.

**Movements.** Probably resident; may potentially have to evacuate some river islands during high-water season.

**Status and Conservation.** Not globally threatened. Rare to uncommon. Owing to linear nature of habitat, global population almost certainly rather small. Occurs in Amacayacu National Park, in Colombia.

**Bibliography.** Cory & Hellmayr (1925), Gyldenstolpe (1945a, 1951), Hilty & Brown (1986), Parker *et al.* (1982), Pinto (1978), Remsen (2003a), Remsen & Parker (1983), Ridgely & Tudor (1994), Rosenberg, G.H. (1990), Sick (1993, 1997), Stotz *et al.* (1996), Traylor (1958), Zimmer (1936a).





127

128

*ssp fusciceps*

*ssp dimorpha*

130

129

*ssp obidensis*

132

*ssp grisior*

133

131

*ssp pudibunda*

*ssp neglecta*

*ssp proxima*

134

*ssp australis*

*ssp modesta*

135

*ssp humilis*

136

*ssp cajamarcae*

139

*ssp wyatti*

*ssp azuay*

137

138

*ssp sclateri*

*ssp punensis*

140

*ssp graminicola*

*ssp sanctaemartae*

*ssp cuchacanchae*

PLATE 21

inches 3  
cm 8



## Genus *THRIPOPHAGA* Cabanis, 1847

### 127. Striated Softtail

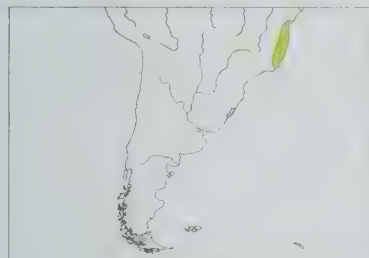
#### *Thriphopha macroura*

**French:** Synallaxe rayé **German:** Zimtschwanzcanastero **Spanish:** Colasuave Estriado

**Taxonomy.** *Anabates macrourus* Wied, 1821, Rio Catolê, Bahia, Brazil.

Possible close relationship of this species and *T. cherriei* to *Asthenes* suggested by some authors on basis of presence of throat patch. Monotypic.

**Distribution.** Coastal SE Brazil, from S Bahia S to N Rio de Janeiro.



**Descriptive notes.** 17-18 cm. Small furnariid with shape like *Cranioleuca* but patterned more like *Asthenes*. Has indistinct buff supercilium, pale lores, rest of face brownish with broad pale buff to tawny-buff streaks; crown and upperparts dark reddish-brown with conspicuous brown-bordered reddish-rufous to rufous buff shaft streaks; wings mostly dark rufous, remiges with dark fuscous tips; tail graduated, rectrices with shafts slightly stiffened basally, tips blunt, pale tawny to cinnamon-rufous; chin and upper throat orange-rufous to yellowish-orange; underparts dull brown, streaked buff, streaks fading on belly and undertail-coverts;

iris deep chestnut brown; upper mandible dusky horn to silvery grey, lower mandible bluish-grey with dusky horn tip; tarsus and toes dull greenish-grey. Sexes alike. Juvenile lacks throat patch, has less well-defined streaks on back, is more mottled than streaked below. **VOICE.** Song 1-2 well-spaced notes followed by burst of trilled notes, lasts c. 1.5 seconds; also descending series of "che" notes, as duet. Loud "kit-kit-kit" call.

**Habitat.** Tropical lowland evergreen forest, ranging, at least, into degraded forest patches; favours areas with dense vine tangles. From near sea-level to 1000 m.

**Food and Feeding.** Arthropods; recorded items include Orthoptera. Forages singly, in pairs, or in small groups (possibly family parties) of 3-5 individuals; usually in mixed-species flocks. Forages from understorey to subcanopy, usually in dense vine tangles but also in foliage and along branches. Gleans food items from vines, dead leaves, branches, trunks and foliage.

**Breeding.** Active nests found in Sept-Oct and Dec-Jan. Presumably monogamous. Nest a ball-shaped mass, c. 25-30 cm in diameter and 20-25 cm tall, made of grassy fibres and moss, or small twigs, and rootlets bound with fibres and moss, with vertical entrance tube c. 3-5 cm long on lower surface; placed in fork of small branches (perhaps woven to them) c. 10-25 m above ground on outer branches in tall, sometimes isolated tree; territory size evidently rather small, perhaps only 1.5 ha. Clutch 3 eggs.

**Movements.** Resident.

**Status and Conservation.** **1 NDANGERED.** Restricted-range species; present in Atlantic Forest Lowlands EBA. Rare to locally fairly common; possibly overlooked. Fairly common in Sooretama Biological Reserve; present in Desengano State Park. Population estimated at 2500-10,000 individuals; declining as a result of habitat destruction. Distribution within seemingly favourable habitat seems patchy. Evidently requires areas of dense vine tangles in tracts of tall forest, which have been almost eliminated in much of its range.

**Bibliography.** Aleixo *et al.* (1991), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cordeiro (2001), Cory & Hellmayr (1925), Lima *et al.* (2002), Mazar Barnett & Kirwan (2003), Pacheco *et al.* (1996a), Parker & Goerck (1997), Pinto (1935, 1938, 1978), Ridgely & Tudor (1994), Sick (1985c, 1993, 1997), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wege & Long (1995).

### 128. Orinoco Softtail

#### *Thriphopha cherriei*

**French:** Synallaxe de l'Orénoque **German:** Strichelkehlcanastrero **Spanish:** Colasuave del Orinoco

**Taxonomy.** *Thriphopha cherriei* Berlepsch and Hartert, 1902, Rio Capuana, Rio Orinoco, Amazonas, Venezuela.

Possible close relationship of this species and *T. macroura* to *Asthenes* suggested by some authors on basis of presence of throat patch. Monotypic.

**Distribution.** SC Venezuela (NW Amazonas).



**Descriptive notes.** 15.5-17.5 cm. Has indistinct buff supercilium, rest of face brownish with pale buff streaks; forehead brown with short buff shaft streaks, crown medium brown, back rufescent brown, rump rufescent, upper-tail-coverts reddish-chestnut; wings mostly dark rufous-chestnut; tail rounded, rectrices slightly stiffened at base, rather rounded at tips, dark rufous; chin tawny-orange, upper throat chestnut-rufous, rest of throat and breast olive-brown with distinct buff streaks, blending to paler brown belly, darker flanks; undertail-coverts reddish-rufous; iris dark red; bill grey to blackish; tarsus and toes dull fleshy olive.

Sexes alike. Juvenile unknown. **VOICE.** No information.

**Habitat.** Dense understorey along streams and in adjacent *várzea* forest, at 120 m.

**Food and Feeding.** No information.

**Breeding.** No information.

**Movements.** Presumably resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species; present in Orinoco-Negro White-sand Forests EBA. Fairly common at its only known site, on R Capuana (right bank of R Orinoco); this included in Sipapo Forest Reserve, but whether this results in any real protection for riverine habitats is unknown. Reasons for this species' restriction to such a small area almost certainly lie in specialization on some unusual, local, type of riverine habitat; type locality described as rainforests and small clearings along riverbanks and small *caños*. No data on population size, trends, or specific threats. Main threat thought to be probably habitat loss caused by unsustainable practice of shifting cultivation.

**Bibliography.** Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cory & Hellmayr (1925), Hilty (2003a), Phelps & Phelps (1950), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wege & Long (1995).

### 129. Plain Softtail

#### *Thriphopha fusciceps*

**French:** Synallaxe terne **German:** Rostflügelcanastrero **Spanish:** Colasuave Sencillo

**Taxonomy.** *Thriphopha fusciceps* P. L. Slater, 1889, mouth of Rio Chapare, 825 feet [c. 250 m], Cochabamba, Bolivia.

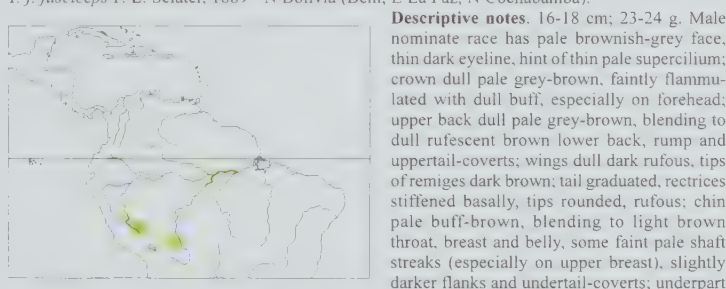
Placed in genus *Phacellodomus* by some authors. Races vary markedly in size; this, and the anomalous pattern of their distribution and unusual combination of habitats, could suggest that the three races are separate species; further research needed. Three subspecies recognized.

**Subspecies and Distribution.**

*T. f. dimorpha* Bond & Meyer de Schauensee, 1941 - E Ecuador (Napó) and SE Peru (Pasco, Junín, Cuzco, Madre de Dios, Puno).

*T. f. obidensis* Todd, 1925 - C Brazil (lower R Madeira, and C R Amazon in E Amazonas and Pará).

*T. f. fusciceps* P. L. Slater, 1889 - N Bolivia (Beni, E La Paz, N Cochabamba).



**Descriptive notes.** 16-18 cm; 23-24 g. Male nominate race has pale brownish-grey face, thin dark eyeline, hint of thin pale supercilium; crown dull pale grey-brown, faintly flammulated with dull buff, especially on forehead; upper back dull pale grey-brown, blending to dull rufescent brown lower back, rump and uppertail-coverts; wings dull dark rufous, tips of remiges dark brown; tail graduated, rectrices stiffened basally, tips rounded, rufous; chin pale buff-brown, blending to light brown throat, breast and belly, some faint pale shaft streaks (especially on upper breast), slightly darker flanks and undertail-coverts; underpart coloration variable, sometimes grey rather than brown; iris chestnut to burnt orange to greyish-lavender (source of variation unknown); upper mandible bluish-horn to pale grey, often darker around nostrils, lower mandible pale grey to pale bluish; tarsus and toes olive-green to yellowish-olive. Female reportedly has on average paler forehead and underparts. Juvenile is faintly mottled on throat and upper breast, less distinctly patterned. Race *dimorpha* is substantially smaller than nominate, coloration evidently quite variable but in general much darker, forehead contrasts less with crown, supercilium absent or indistinct, back darker and strongly rufescent, underparts darker and more rufescent (variable, browner or greyer); *obidensis* is a darker brown throughout than previous, and no variation in underpart coloration. **VOICE.** Song of nominate race begins with widely spaced, dry ticking notes, accelerating and rising to extremely high notes, then descends into bursts of sputtering tick notes, lasts as long as 25 seconds; often given as duet. Call undescribed.

**Habitat.** Flooded tropical evergreen forest and river-edge forest, mainly humid *várzea* and transitional forest, usually at edge or around treefalls, often where dense tangles of vines; also drier forest, deciduous forest. At 50-500 m.

**Food and Feeding.** Arthropods. Usually in pairs or small groups, often with mixed-species flocks. Forages from understorey up to subcanopy. Acrobatically gleans food items from dead leaves, debris and small branches, often within dense vine tangles; possibly a dead-leaf specialist.

**Breeding.** Nest a globular mass c. 20 cm in diameter, made from small twigs and soft plant material, with two short entrance tubes on lower side, placed in fork of small branches in canopy tree; single known nest of race *dimorpha* had two entrance tubes converging from above on interior nest-chamber, a novel construction within the family. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare and local; absent from many areas where habitat superficially seems suitable. Present in Manu National Park and Biosphere Reserve.

**Bibliography.** Bond & Meyer de Schauensee (1941), Chapman (1926), Cory & Hellmayr (1925), Foster *et al.* (1994), Mazar Barnett & Kirwan (2003), Pacheco *et al.* (1996a), Parker *et al.* (1982), Pinto (1978), Remsen (2003a), Remsen & Parker (1984), Remsen & T aylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schmitt & Schmitt (1987), Sick (1993, 1997), Stotz, Fitzpatrick *et al.* (1996), Stotz, Pequeño *et al.* (2002), Terborgh *et al.* (1984), Whitney *et al.* (1996), Zyskowski (2003), Zyskowski & Prum (1999).

### 130. Russet-mantled Softtail

#### *Thriphopha berlepschi*

**French:** Synallaxe mantelé **German:** Graustirncanastero **Spanish:** Colasuave Dorsirrufo

**Taxonomy.** *Thriphopha berlepschi* Hellmayr, 1905, Leimebamba, 10,000 feet [c. 3050 m], Amazonas, Peru.

Placed in genus *Phacellodomus* by some authors, whereas others suspect that it belongs in *Cranioleuca*. Differs from congeners in general plumage and montane distribution, but head pattern and bill coloration very similar to those of *T. fusciceps*. Monotypic.

**Distribution.** Andes of N Peru (Amazonas S to La Libertad).







**Food and Feeding.** Arthropods. Forages solitarily or in pairs, occasionally in mixed-species flocks. Gleans items from ground, possibly also from low vegetation.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in High Andes of Bolivia and Argentina EBA. Fairly common to uncommon; probably overlooked. Evidently tolerates at least moderate habitat disturbance and fairly heavy grazing; present in some agricultural areas. Not dependent on *Polylepis*; some populations, however, under pressure from clearance of such woodland for cultivation and exotic plantations, firewood-gathering, and burning to create pasture.

**Bibliography.** Anon. (2003c), Bond (1945), Chebez *et al.* (1999), Collar *et al.* (1994), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Fjeldså & Majer (1996), Mazar Barnett & Pearman (2001), Mazar Barnett, Clark *et al.* (1998), Pearman (2001), Ridgely & Tudor (1994), Schulenberg & Awbrey (1997b), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vuilleumier (1969).

## 134. Cordilleran Canastero

### *Asthenes modesta*

**French:** Synallaxe des rocailles **German:** Graslandcanastero **Spanish:** Canastero Pálido

**Taxonomy.** *Synallaxis modestus* Eyton, 1851. Bolivia (?).

Forms a superspecies with *A. cactorum*, and sometimes considered conspecific. Nominate race apparently varies clinally in back colour, darkest in N, palest and sandiest in S. Proposed race *navasi*, from S Argentina, described as differing from *australis* in biometrics (significantly shorter bill, longer wing and tail), but overlap in measurements prevents diagnosis of many specimens. Seven subspecies recognized.

**Subspecies and Distribution.**

*A. m. proxima* (Chapman, 1921) - Andes of C & S Peru (Junín S to Cuzco).

*A. m. modesta* (Eyton, 1851) - Andes of SW Peru (Arequipa, Puno) and W Bolivia (W La Paz, Oruro, Potosí) S to N Chile (Tarapacá, Antofagasta) and NW Argentina (Jujuy, Salta, Catamarca).

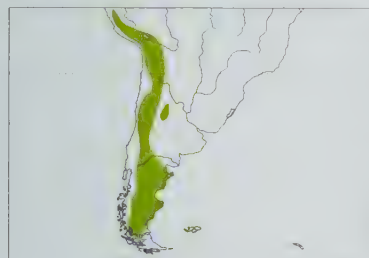
*A. m. rostrata* (Berlepsch, 1901) - C Bolivia (E slope in La Paz and Cochabamba).

*A. m. hilereti* (Oustalet, 1904) - Andes of NW Argentina (Sierra de Aconquija and Cumbres Calchaquies, in Tucumán and Catamarca).

*A. m. australis* Hellmayr, 1925 - C & S Chile (Andes from S Atacama S to Colchagua, lowlands in Aisén and N Magallanes) and W & S Argentina (Andes S from La Rioja, and lowlands from La Pampa, and Serranías de Ventania in SW Buenos Aires, S to Santa Cruz).

*A. m. serrana* Nores, 1986 - Cerro Famatina, in La Rioja (W Argentina).

*A. m. cordobae* Nores & Yzurieta, 1980 - Córdoba (Sierras Grandes, Sierra de Comechingones) and NE San Luis (Sierra de San Luis), in C Argentina.



rectrices tapered and somewhat pointed at tips, dark fuscous and rufous in varying proportions, from rufous confined to outer webs of central pair, to outer pair being almost completely rufous except for some dark fuscous at base of inner webs; malar region whitish buff-brown with darker brown streaks; chin and upper throat pale brownish with dark to pale orange-rufous (source of variation uncertain) feather bases forming "messy" throat patch; neck side, lower throat and upper breast whitish grey-brown with obscure darker streaking, rest of breast and belly pale brown, flanks and undertail-coverts tinged rufescent; iris brown to dark brown; upper mandible black to dark brownish-horn, lower mandible horn to brownish-grey with dark tip; tarsus and toes blackish-grey to dusky brown. Sexes alike. Juvenile lacks throat patch, has mottled breast and belly. Race *proxima* is like darker-backed nominate, but outer webs of rectrices paler, tawny-rufous rather than intense rufous; *rostrata* has darker upperparts, including central rectrices, and rufous in wings darker; *hilereti* has greyer back than nominate race or previous; *serrana* is like nominate, but underparts paler and greyer, less rufescent (but more ochraceous below and more rufescent above than previous); *cordobae* darker brown, less cinnamon, above and less cinnamon below than nominate, with wings and tail darker than other races; *australis* is greyer above than nominate, wing-coverts less rufescent, paler and less buffy underparts, also longer bill. VOICE. Song an ascending fast trill that ends abruptly, c. 2 seconds long; also more complex trill with introductory notes; in Argentina, described as "chichichi, chirí, chirí... chichichi, chirí, chirí". Call a short, low "pyup" or "tjit".

**Habitat.** Puna grassland, southern temperate grassland; arid to semi-humid grassland, often rocky and often with scattered low bushes, locally in arid montane scrub in S Argentina; also arid *Polylepis* thickets, scrub *Baccharis tola* scrub, and dry open woodland. From near sea-level to 4500 m.

**Food and Feeding.** Arthropods; recorded dietary items are Coleoptera, ants, cockroaches (Blattidae). Usually forages solitarily, occasionally in pairs. Gleans items from ground, also rarely from low vegetation.

**Breeding.** Season during austral spring-summer; eggs in Oct-Jan and nestlings in Nov and Feb in Argentina; eggs in Nov in Chile; fledglings in Apr in C Bolivia. Presumably monogamous. Nest a cylindrical or spherical mass of twigs, often thorny ones, tightly interwoven, often feathers and hair included, entrance hole on side, interior chamber c. 12-15 cm in diameter, lined with feathers and hair; placement exceptionally variable, sometimes 0.5-2 m up in bush, also on ground in rock crevice, in hole in dirt bank, among root clumps, or in abandoned nest of other bird. Clutch 2 eggs in Argentina, 3-4 in Chile.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common in much of its range. Habitat occupied by this species is generally subjected to at least moderate overgrazing.

**Bibliography.** Araya & Chester (1993), Behn *et al.* (1958), Bond (1945), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Contreras (1979a, 1980b), Cory & Hellmayr (1925), Fiora (1933), Fjeldså & Krabbe (1990), Johnson (1967), Koepcke (1959, 1970), Mazar Barnett & Pearman (2001), Narosky, Fraga & de la Peña (1983), Narosky, Salvador & Saibene (1984), Navas & Bó (1987), Nores (1986), Olrog (1956), Parker *et al.* (1982), Pearman (1990), Peña (1961), de la Peña (1983b, 1987, 1988), Remsen (2003a), Remsen & Traylor (1989), Ribero (1991),

Ridgely & Tudor (1994), Salvador (1988, 1990), Stotz *et al.* (1996), Torres-Mura (1998), Walker (2001), Zotta (1932).

## 135. Cactus Canastero

### *Asthenes cactorum*

**French:** Synallaxe des cactus **German:** Kaktuscanastero **Spanish:** Canastero de los Cactus

**Taxonomy.** *Asthenes cactorum* Koepcke, 1959, Atico, Arequipa, Peru.

Forms a superspecies with *A. modesta*, and sometimes considered conspecific. Supposedly smaller birds from the *lomas* of Lachay region, having greyish-rose cast and very dark central rectrices with dark rufous webs, described as race *lachayensis*; those from higher Andes from Lima S to Arequipa proposed as race *monticola*, said to differ from birds of coastal *lomas* in larger size, browner (less ochre) upperparts, darker central rectrices, somewhat darker throat patch, and less uniform underparts with more contrasting darker sides and flanks; both populations, however, appear to be products of clinal variation combined with differences in degree of plumage wear, and described characters do not permit diagnosis of individual specimens. Monotypic.

**Distribution.** W slope of Andes of SW Peru (Lima S to Arequipa).



**Descriptive notes.** 13-14 cm; 16-19 g. Large-billed, rather dull canastero. Has dull pale buff supercilium behind eye, fuscous lores and postocular band, contrasting dull buff line above lores, dull buff auriculars faintly flammulated; crown and upperparts rather uniform plain dull brown; median and greater wing-coverts mostly dull rufous, remiges dull fuscous with rufous wingband; tail graduated, rectrices somewhat pointed, central pair gradually tapering, central pair dark brown but becoming dull brown (like upperparts) along margins, next two pairs dull dark fuscous with outer webs margined tawny, next pair rufous

except for dark fuscous margins basally, outer two pairs almost completely rufous; chin and centre of throat dull pale orange-tawny, blending to dull pale buff breast and rest of underparts; iris brown; upper mandible black to grey, lower mandible blue-grey with blackish tip; tarsus and toes grey-brown to black. Sexes alike. Juvenile undescribed. VOICE. Song a weak, dry trill lasting up to 6 seconds; call described as low-pitched, fast, dry trill 0.5-2 seconds long, often repeated.

**Habitat.** Arid montane scrub; arid slopes with sparse bushes, such as *Jatropha*, and columnar cacti; 50-2500 m.

**Food and Feeding.** Little known. Solitary or in pairs. Apparently gleans arthropods from ground, rocks, cacti, and perhaps low vegetation.

**Breeding.** Season mainly austral spring-summer; eggs in Oct-Jan (also Jun-Aug for "*lachayensis*"). Presumably monogamous. Nest in columnar cactus. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Peru-Chile Pacific Slope EBA. Uncommon. A poorly known species. Habitat is subjected to at least moderate overgrazing.

**Bibliography.** Fjeldså & Krabbe (1990), Koepcke (1959, 1963, 1970), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vuilleumier (1980a).

## 136. Streak-throated Canastero

### *Asthenes humilis*

**French:** Synallaxe terrestre **German:** Streifenkehlcanastero **Spanish:** Canastero Gorgiestriado

**Taxonomy.** *Synallaxis humilis* Cabanis, 1873, Maraynioc, Junín, Peru.

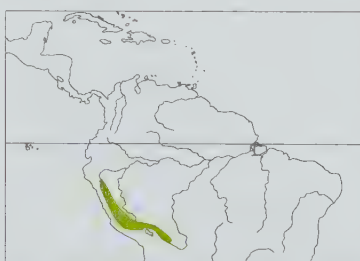
Specimens from interior Andes of Junín and Lima (Peru), with pinkish wash below, may represent an undescribed race. Three subspecies recognized.

**Subspecies and Distribution.**

*A. h. cajamarcae* J. T. Zimmer, 1936 - Andes of NW Peru (S Cajamarca).

*A. h. humilis* (Cabanis, 1873) - Andes of C Peru (La Libertad and Ancash S to Huancavelica and Ayacucho).

*A. h. robusta* (Berlepsch, 1901) - Andes of S Peru (Cuzco S to Puno) and N Bolivia (La Paz, W Cochabamba).



**Descriptive notes.** 15-16 cm; 23-24 g. Typical canastero with coloured throat patch, some striping on head, medium-length tail. Nominative race has dull whitish-buff supercilium extending to bill base, dark brownish lores and vague postocular band, rest of face and side of neck streaked dark brown and greyish-buff; crown dark dull brown with vague dark shaft streaks, blackish spotting on forehead; upperparts dark dull brown, faint darker streaks on upper back becoming longer and broader towards lower back; wings mainly dull dark brownish, wing-coverts partly rufous, rufescent margins of some secondaries; tail gradu-

ated, central pairs of rectrices tapering, somewhat pointed, feathers dark brown with tawny-buff margins on outer webs; chin orange-rufous, blending to dull pale brown throat and underparts, belly paler, flanks and undertail-coverts warmer brownish-buff (underparts washed clay-pinkish in interior Peruvian Andes in Junín and Lima), narrow blackish streaks on throat fading and paling on upper breast; iris brown; upper mandible black to dark horn, lower mandible blackish to grey with black tip; tarsus and toes greyish-olive to brownish-grey. Sexes alike. Juvenile has faint or no orange on throat, less distinct streaks, more prominent rufous markings in tail. Race *cajamarcae* is greyer above with more distinct streaks, paler and less buffy below; *robusta* is like nominate, but darker back with less distinct streaks (reported characters of larger size, larger throat patch, more heavily blackish-marked neck and side of throat, greyish-edged inner rectrices not sustained in series of specimens). VOICE. Song described as a quavering, soft trill 2-5 seconds in duration; also gives doubled or tripled trill that lasts c. 1 second. Contact call a burst of "pit" notes, usually repeated 2-3 times.



**Habitat.** Puna grassland; usually rocky, occasionally with scattered bushes. At 2750–4800 m.  
**Food and Feeding.** Recorded dietary items include Coleoptera, Lepidoptera larvae, also small seeds. Forages singly or in pairs. Gleans arthropods from ground and from bases of bunch-grass.  
**Breeding.** Season presumed during austral spring-summer, at least in S of range; fledglings in Dec in N Peru and Mar in N Bolivia. Presumably monogamous. Nest a ball c. 12 × 15 cm, of grass, side entrance hole, lined with feathers, hair and plant material, placed on ground within clump of bunch-grass. No further information.  
**Movements.** Resident; some downslope movement reported during snowstorms in S.  
**Status and Conservation.** Not globally threatened. Fairly common to common throughout much of range. Tolerates at least moderate grazing.  
**Bibliography.** Bond (1945), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Koepeke (1954, 1970), Morrison (1939), O'Neill & Parker (1978), Parker *et al.* (1982), Pearman (1990), Remsen (2003a), Remsen & T aylor (1989), Ribero (1991), Ridgely & Tudor (1994), Stotz *et al.* (1996), Taczanowski (1884), Vuilleumier (1980a), Walker (2001), Whitney *et al.* (1994), Zimmer (1930, 1936a).

## 137. Streak-backed Canastero

### *Asthenes wyatti*

**French:** Synallaxe de Wyatt

**Spanish:** Canastero de Wyatt

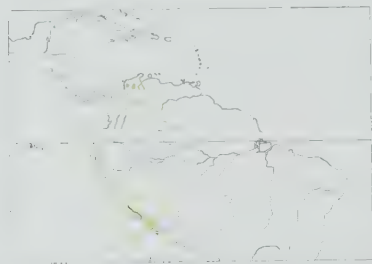
**German:** Nördlicher Schwarzstrichelcanastero

**Taxonomy.** *Synallaxis wyatti* P. L. Slater and Salvin, 1871, Páramo de Pamplona, Santander, Colombia.

Considered by some to form a superspecies with *A. sclateri* and *A. anthoides*. Possibly best treated as conspecific with first of those, as birds in L Titicaca region (Peru-Bolivia border) appear to be intergrades between the two; S races (*azuay*, *graminicola*) formerly treated as a separate species, and they may indeed be more closely related to *A. sclateri* than to other taxa in present species. Species limits of both in need of careful revision. Race *mucochiesi* considered doubtfully distinct from nominate by some authors. Racial identity of birds reported in N Peru unknown; tentatively included within *azuay*. Seven subspecies tentatively recognized.

#### Subspecies and Distribution.

*A. w. sanctaemartae* Todd, 1950 - N Colombia (Santa Marta Mts).  
*A. w. perijana* Phelps, Jr., 1977 - Perijá Mts, on NE Colombia-NW Venezuela border.  
*A. w. mucochiesi* Phelps, Sr. & Gilliard, 1941 - Andes of W Venezuela (Trujillo, Mérida).  
*A. w. wyatti* (P. L. Slater & Salvin, 1871) - E Andes of N Colombia (N Santander).  
*A. w. aequatorialis* (Chapman, 1921) - W Andes of C Ecuador (Cotopaxi S to Chimborazo).  
*A. w. azuay* (Chapman, 1923) - Andes of S Ecuador (Azuay, Zamora-Chinchipec, N Loja) and N Peru (sight records from Piura, Cajamarca, Ancash).  
*A. w. graminicola* (P. L. Slater, 1874) - Andes of C & S Peru (Junin S to Puno).



**Descriptive notes.** 17 cm; 17–25 g. Rather dark canastero with streaked back. Nominative race has narrow buff supercilium, rest of face grizzled light brown and blackish, darkest on lores; crown to uppertail-coverts olive-brown with dense dark brown streaks, beginning as flecks on forehead, becoming fine streaks on crown and neck, broadening on back; wings dark fuscous, coverts with rufous margins, primaries with tawny-rufous margins, secondaries with rufous bases (forming wingband); tail graduated, central rectrices tapering to rounded tips, central three pairs dark fuscous brown with progressively more rufous on outer webs, outer three pairs mostly rufous with some dark fuscous along inner webs; chin tawny-buff, centre of upper throat light orange-rufous with narrow dark brown streaks, lower throat pale brownish-grey with narrow streaks continuing from upper throat; breast light brown with inconspicuous (often invisible) dark brown flecks and spots, belly bright tawny-buff, flanks and undertail-coverts rufescent buff; iris brown to dark brown; upper mandible black to dark horn, lower mandible greyish-horn to pinkish with black tip; tarsus and toes black to greyish. Sexes alike. Juvenile is darker brown throughout, lacks throat patch, has less distinct streaks on upperparts. Race *sanctaemartae* has broader but less contrasting streaks above (contrary to original description), darker orange throat, dingy greyish-buff underparts, longer bill; *mucochiesi* is very like nominate, but upperparts less brownish, edgings on crown and back greyer, other purported but disputed differences being shaft streaks on back darker (brownish-black), uppertail-coverts light olivaceous grey (rather than brown with buff-brown edges), outer rectrices with blackish edging on basal halves of inner webs; *perijana* is most like previous, but upperparts darker brown, underparts light brown (instead of smoky greyish), underside of tail dark chestnut-brown (instead of cinnamon-brown); *aequatorialis* is like nominate, but upperparts more grey-brown or rufous-brown, spots larger and blacker, tail blacker; *azuay* is more buffy below than previous, distinctive in having wings almost entirely rufous; *graminicola* is duller than last, underparts tawny with only hint of streaks. **VOICE.** Song of race *mucochiesi* described as of two types, either a single insect-like trill or 3 shorter insect-like trills, both lasting c. 1 second, of *aequatorialis* and *azuay* as accelerating fast trill c. 2 seconds long with slightly rising pitch, and for *graminicola* as trilled burst c. 1.5 seconds long; whether differences are real or are artifacts of different describers awaits formal analysis. Contact call described as “chick”, “tick” or “took” note, usually in series; also as doubled or tripled short trill (Ecuador).

**Habitat.** Páramo and puna grassland, often arid, usually with rocks and with or without low bushes; mainly in *Espeletia* mixed with shrubs and tussock grass in N parts of range. Mostly 3000–4500 m; locally to 5000 m and (*sanctaemartae*) down to 2400 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs. Mainly terrestrial. Gleans items from ground, grass clumps and *Espeletia* foliage; noted also as leaping into air to catch flying insects.

**Breeding.** Eggs in Jan in S Peru; fledgling in Apr in N Colombia. Presumably monogamous. Nest a round mass c. 25 cm in diameter, of dried leaves and grass stems, well interwoven, entrance hole on side opens directly into nest-chamber c. 12 cm in diameter, lined with fine grasses; placed near ground in clump of grass, extremely well concealed (unlike nests of most congeners). Clutch 2–3 eggs.

**Movements.** Resident; some downslope movement reported during snowstorms in S Andes.

**Status and Conservation.** Not globally threatened. Rare to locally common; rather scarce and local in Ecuador. Occurs in Sierra Nevada National Park, in Venezuela, Cotopaxi National Park, in Ecuador, and in Machu Picchu Historical Sanctuary, in Peru.

**Bibliography.** Chapman (1926), Cory & Hellmayr (1925), Dorst (1963), Fjeldså & Krabbe (1990), Hilty (2003a), Hilty & Brown (1983, 1986), Koepeke (1954, 1970), Krabbe (2000), Krabbe *et al.* (1996), Morrison (1939), O'Neill & Parker (1978), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Pearman (1990), Phelps (1977b),

Remsen (2003a), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stotz *et al.* (1996), Taczanowski (1884), Todd (1950b), Todd & Carriker (1922b), Vuilleumier (1980a, 1997), Vuilleumier & Ewert (1978), Walker (2001), Wetmore (1926).

## 138. Puna Canastero

### *Asthenes sclateri*

**French:** Synallaxe de Cordoba

**Spanish:** Canastero de la Puna

**German:** Südlicher Schwarzstrichelcanastero

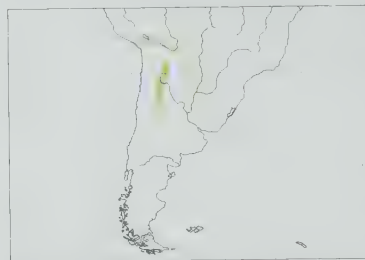
**Other common names:** Cordoba Canastero; Puno Canastero (“*punensis* group”); Bolivian Canastero (*cuchacanchae*); Lillo’s Canastero (*lilloi*)

**Taxonomy.** *Synallaxis Sclateri* Cabanis, 1878, Sierra de Córdoba, Argentina.

Considered by some to form a superspecies with *A. wyatti* and *A. anthoides*. Possibly best treated as conspecific with former, as birds in L Titicaca region (Peru-Bolivia border) appear to be intergrades between the two; race *punensis* (with *cuchacanchae* and *lilloi*) previously considered conspecific with *A. wyatti*, and often treated as a separate species. Species limits in need of careful revision. Sight records from S Bolivia (Chiquisaca, Tarija) presumed referable to race *cuchacanchae*. Five subspecies recognized.

#### Subspecies and Distribution.

*A. s. punensis* (Berlepsch & Stolzmann, 1901) - Titicaca Basin in extreme S Peru (S Puno) and W Bolivia (La Paz).  
*A. s. cuchacanchae* (Chapman, 1921) - Andes of C Bolivia (Cochabamba, Potosí, sight records also from Chuquisaca and Tarija) and NW Argentina (Salta).  
*A. s. lilloi* (Oustalet, 1904) - Andes of NW Argentina (Catamarca, Tucumán, La Rioja).  
*A. s. sclateri* (Cabanis, 1878) - NC Argentina (Sierra de Córdoba and other mountains in region).  
*A. s. brunescens* Nores & Yzurieta, 1983 - C Argentina (Sierra de San Luis).



**Descriptive notes.** 17–18 cm; 19–27 g. Nominative race has buff supercilium, rest of face mottled greyish-brown; crown to uppertail-coverts pale grey-brown with blackish streaks margined with dull rufous; wing-coverts dark brown, strongly margined with rufous-chestnut, basal half of remiges bright rufous, rest brown with rufescent margins; tail graduated, central rectrices with rounded tips, central pair dark grey-brown, remainder dark fuscous with rufous tips, rufous increasing in extent towards outer rectrices; throat whitish with indistinct pale rufous patch in centre, underparts tawny-buff, paler on belly; iris brown; upper mandible dark grey, lower mandible light grey; tarsus and toes light brownish. Sexes alike. Juvenile is darker, with darker throat. Race *punensis* is darker and greyer above than nominate, much like race *graminicola* of *A. wyatti* but rectrices longer, broader and with rufous restricted to tips (also back paler and less heavily streaked), juvenile with mottled breast; *cuchacanchae* is paler and more heavily streaked above, wingband paler, paler and less tawny below, especially on flanks and undertail-coverts; *lilloi* is like previous, but upperparts slightly darker, tinged rufescent, and more heavily marked, wingband and primary coverts deeper rufous; *brunescens* differs from last in being greyer above, wing-coverts and wingband paler rufous, more whitish and less cinnamon below. **VOICE.** Song (nominative race) an accelerating and ascending trill 1–2 seconds long; call (nominative) described as soft “tzip” or “chup”. Voice evidently not unlike that of *A. wyatti*.

**Habitat.** Southern temperate grassland; rocky puna grassland, usually with tall bunch-grass and shrubs; locally in *Polylepis* woodland with bunch-grass as ground cover. Mainly 2000–4000 m; locally down to 1800 m.

**Food and Feeding.** Arthropods. Solitary or in pairs; gleans food items from ground and grass clumps.

**Breeding.** Season presumably during austral spring-summer; eggs in Sept-Jan and nestlings in Jan in Argentina. Presumably monogamous. Nest a domed mass c. 10 × 15 cm, of interwoven dried leaves and stems, sometimes with moss, lichens and dead leaves, side entrance c. 10 cm above ground level, extremely camouflaged, often incorporating living grass stems into structure, interior chamber c. 10 cm in diameter, sometimes also with long (25–35 cm) lateral entrance; placed close to ground in middle of or at base of grass clump. Clutch 2–3 eggs.

#### Movements.

**Status and Conservation.** Not globally threatened. Fairly common; not well known. Habitat generally subject to at least moderate grazing pressure.

**Bibliography.** Bond (1945), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Cory & Hellmayr (1925), Dorst (1963), Fjeldså & Krabbe (1990), Fjeldså & Majer (1996), Fraga & Narosky (1985), Hoy (1965, 1975), Krabbe *et al.* (1996), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas & Bó (1982), Nores, M. (1995), Nores, M. *et al.* (1983), Olrog (1962, 1963a), Parker *et al.* (1982), de la Peña (1987, 1988), Remsen (2003a), Remsen & T aylor (1989), Ridgely & Tudor (1994), Salvador (1990), Schulenberg & Awbrey (1997b), Stotz *et al.* (1996), Stresemann (1948), Vuilleumier (1980a, 1997).

## 139. Austral Canastero

### *Asthenes anthoides*

**French:** Synallaxe austral

**Spanish:** Canastero Austral

**German:** Südlicher Flügelspiegelcanastero

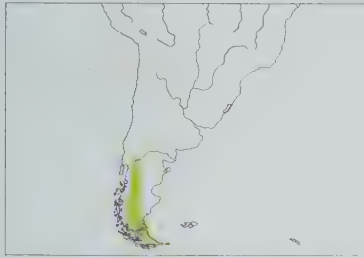
**Taxonomy.** *Synallaxis anthoides* P. P. King, 1831, no locality; type presumably from Strait of Magellan, Chile.

Considered by some to form a superspecies with *A. wyatti* and *A. sclateri*; “*punensis* group” of latter previously considered conspecific. Plumage similarities between present species and *A. hudsoni* have suggested to some authors that the two are sister-taxa. Monotypic.

**Distribution.** Breeds from S Chile (Andean foothill region from possibly Concepción S to Aisén, also from Magallanes) and SW Argentina (foothills in S Neuquén S to Chubut, and in Santa Cruz) S to Tierra del Fuego.

**Descriptive notes.** 16–17 cm; 21–23 g. Relatively short-tailed canastero with striped dorsal pattern like that of a pipit (*Anthus*). Has dull pale buff supercilium extending to forehead, dark fuscous lores and postocular area; rest of face brownish to grey-brown with faint streaking; crown and upperparts sandy brown with blackish streaks, these densest on crown, thinning on nape and upper back, becoming very broad on rest of back, narrowing again on rump and uppertail-coverts; wing-





coverts dark brown, greater edges tawny, medians and lessers with broad dull rufous margins, remiges dark fuscous with contrasting dull pale tawny bases of primaries, tawny-rufous bases of secondaries; tail graduated, central rectrices tapering to blunt points, central pair dark olive-brownish with sharply defined broad dark brownish stripe along length of shaft, next pair almost entirely dark fuscous, outer three pairs with increasing amounts of pale rufous at tips and tawny-whitish outer webs; chin whitish, centre of upper throat pale orange-rufous, rest of throat greyish-buff with fine indistinct dark greyish streaks; breast

browner and darker with narrow indistinct dark streaks, blending to lighter belly with only hint of streaks, centre almost whitish, flanks light warm brown with hint of streaks; iris brown to blackish; upper mandible black to dusky horn, lower mandible grey to dusky horn with pale base; tarsus and toes pinkish or dusky grey. Sexes alike. Juvenile lacks throat patch, has barring on breast. **VOICE.** Song a short, even trill lasting c. 1 second, reminiscent of that of *A. wyatti*; call described as "tick".

**Habitat.** Southern temperate grassland; mesic shrub-steppe dominated by *Chilothrichum diffusum* and *Berberis* shrubs 1-1.5 m tall and tussock grasses (especially *Festuca gracillima*); also locally in lower, more open scrub (e.g. dominated by *Mulinum spinosum* or *Lepidophyllum cupressiforme*) with little or no tussock grass, woodland dominated by *Nothofagus*, and beach scrub. Sea-level to 1500 m, occasionally to 1650 m.

**Food and Feeding.** Arthropods; recorded items are shield-bugs (Pentatomidae), and Coleoptera (of families Chrysomelidae, Carabidae, Tenebrionidae) and their larvae. Forages solitarily or in pairs. Gleans food items from ground and low vegetation, regularly leaping up to glean insects from grass stems; regularly "burrows" into grass clumps to forage.

**Breeding.** Season presumably during austral spring-summer; eggs in Dec and fledglings in Jan-Feb. Presumably monogamous. Nest a globular mass of thorny sticks, entrance hole on side but near top, no interior tunnel, interior lined with soft plant material, lichens and flowers. No further information.

**Movements.** Mostly resident; some populations possibly migratory, but evidence for this weak. Records N to Aconcagua (Chile) may refer to non-breeding migrants; reports from EC Argentina (Buenos Aires), Staten I (off Tierra del Fuego) and Falkland Is require verification.

**Status and Conservation.** Not globally threatened. Currently considered a species of Lower Risk/Least Concern. Uncommon to locally common. Although declines have been reported in recent decades, and it was suspected that this species was once characteristic of the Patagonian long-grass prairie (now destroyed by grazing), field studies have shown that it is not primarily a grassland species nor has it declined; rather, has become more common over the last century, at least in parts of Tierra del Fuego. On the other hand, habitat almost throughout range is subjected to degradation through intense, probably unsustainable levels of grazing.

**Bibliography.** Araya & Chester (1993), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Chesser (1994), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cory & Hellmayr (1925), Estes *et al.* (1994), Ejlsdå & Krabbe (1990), Grigera *et al.* (1996), Hellmayr (1932), Howell & Webb (1995c), Hoy (1975), Humphrey *et al.* (1970), Johnson (1967), Krabbe (2000), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas & Bo (1982), Olrog (1948, 1962), Parker *et al.* (1982), Pässler (1922), de la Peña (1988), Philippi *et al.* (1954), Ralph (1985), Rasmussen *et al.* (1992), Remsen & Traylor (1989), Ridgely & Tudor (1994), Stotz *et al.* (1996), Vuilleumier (1997), Wege & Long (1995), Woods (1988), Zotta (1932, 1936).

## 140. Hudson's Canastero

### *Asthenes hudsoni*

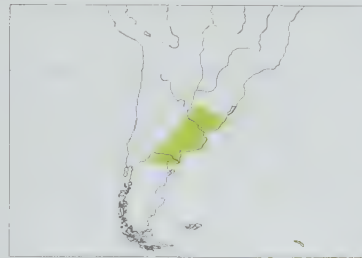
**French:** Synallaxe de Hudson

**Spanish:** Canastero Pampeano

**German:** Nördlicher Flügelspiegelcanastero

**Taxonomy.** *Synallaxis hudsoni* P. L. Selater, 1874, Conchitas, Buenos Aires, Argentina. Plumage similarities have suggested to some authors that this and *A. anthoides* are sister-species; others suggest that sister-taxon is *A. sclateri*. Monotypic.

**Distribution.** E Argentina (Santa Fe and Entre Ríos S to Rio Negro and S Buenos Aires), extreme SE Brazil (SE Rio Grande do Sul) and Uruguay.



**Descriptive notes.** 18 cm. Conspicuously streaked, long-billed canastero. Has narrow dull pale buff supercilium, rest of face sandy brownish; crown and upperparts sandy brown with prominent blackish and silvery streaks; wing-coverts dark brown, greater edges whitish-edged at tips, medians and lessers with broad dull rufous margins, remiges dark fuscous, contrasting whitish-tawny bases of primaries, tawny-rufous bases of secondaries; tail graduated, shafts stiffened basally, elongated central rectrices with very pointed tips, dusky with conspicuous silvery buff edgings; chin patch usually whitish, often tinged yellowish, occasionally orange-rufous (source of variation unknown); throat, breast and belly buff, becoming duller posteriorly, richer on sides and flanks to undertail-coverts, flanks with conspicuous blackish streaks; iris light brown; upper mandible fuscous black, lower mandible pale horn to grey with blackish tip; tarsus and toes drab light brownish. Sexes alike. Juvenile is distinctive, breast and sides with blackish-brown streaks. **VOICE.** Song a short ascending trill; call undescribed.

**Habitat.** Southern temperate grassland; tall wet grass (e.g. *Paspalum quadrifarium*) and sedges adjacent to wetlands; from near sea-level to 950 m.

**Food and Feeding.** Reported dietary items are Lepidoptera larvae, Coleoptera, shield-bugs (Pentatomidae), Orthoptera and Hymenoptera. Solitary or in pairs. Probably gleans arthropods from ground or low vegetation.

**Breeding.** Season during austral spring-summer; eggs in Nov-Dec and nestlings in Nov. Presumably monogamous. Nest extremely well concealed, a hollow scooped out on ground under clump of grass or thistles and with domed cover of fine grass and small twigs, or spherical mass of grass slightly above ground level in grass clump, lined with feathers, hair and small twigs. Clutch 3-4 eggs, sometimes 2 (possibly) or 5.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common. Restriction to regions with wetlands naturally limits its population size. Potentially vulnerable to drainage, pollution and other problems that affect birds of wetlands.

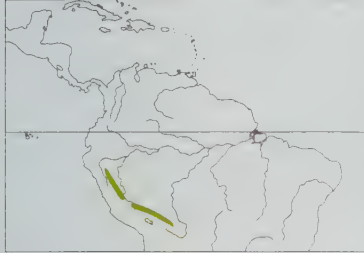
**Bibliography.** Belton (1984), Bencke (2001), Canevari *et al.* (1991), Chebez *et al.* (1999), Comparatore *et al.* (1996), Cory & Hellmayr (1925), Cuervo (1985), Fraga & Narosky (1985), Isach & Martínez (2001), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Norez *et al.* (1983), Olrog (1963a), de la Peña (1988), Pinto (1978), Ridgely & Tudor (1994), Sick (1993, 1997), Stotz *et al.* (1996), Vuilleumier (1997), Wetmore (1926), Zotta (1932, 1936, 1940).



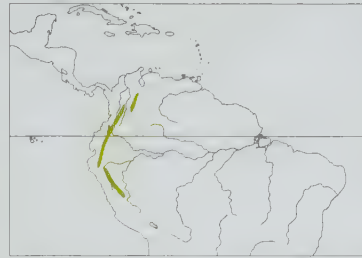




## 141. Line-fronted Canastero

*Asthenes urubambensis***French:** Synallaxe inca **German:** Dunkelrückencanastero **Spanish:** Canastero del Urubamba**Taxonomy.** *Siptornis urubambensis* Chapman, 1919, Machu Picchu, 14,000 feet [c. 4270 m], Cuzco, Peru.Plumage similarities suggest closer relationship to *A. flammulata* and *A. virgata* or to *A. maculicauda* than to others in genus. Two subspecies recognized.**Subspecies and Distribution.***A. u. huallagae* (J. T. Zimmer, 1924) - Andes of C Peru (San Martín S to Pasco).*A. u. urubambensis* (Chapman, 1919) - Andes of S Peru (Cuzco, Puno) and W Bolivia (La Paz, Cochabamba).**Descriptive notes.** 17-18 cm; 16-20 g. A large and heavily striped canastero, with narrow and "spiny" tail reminiscent of that of *Schizoeaca*. Nominate race has conspicuous whitish supercilium broadening behind eye, extending anteriorly to forehead; rest of face light brownish with conspicuous, narrow dark brown streaks; forehead dark brown with sharply defined golden-brown stripes, these fading on paler, browner crown; hindneck and upperparts rich brown, collar of blurry light brown streaks, some of these fading into upper back, some broad pale shaft streaks on uppertail-coverts; wings rich brown, dark fuscous tips of remiges;tail graduated, rectrices narrow and extremely pointed, vanes narrowing from about half-way along to become nearly non-existent at tips, rich brown; chin pale tawny to dark rufous, upper throat tawny to orange-rufous (source of variation uncertain); lower throat light buff-brown with dark brown streaks, blending to paler breast with broad dark brown and pale buff streaks, these fading into pale dull buff belly that contrasts sharply with rich brown flanks and undertail-coverts with pale shaft streaks; iris brown; upper mandible black to grey-horn, lower mandible silver-grey to pinkish, often with darker tip; tarsus and toes olive to grey. Sexes alike. Juvenile undescribed. Race *huallagae* is slightly darker and redder above, dorsal streaking much more restricted, primarily on forehead and hindneck, with more conspicuous, extensive and whiter (less buffy) streaking below extending through flanks and belly. **VOICE.** Song an ascending trill; call a high "tseut".**Habitat.** *Páramo* grassland and timber-line ecotone with mossy scrub with *Gynoxis* and *Ribes* bushes, and *Polylepis* groves; 3050-4300 m.**Food and Feeding.** Arthropods. Forages singly or in pairs. More arboreal than congeners, hops along branches; also walks on ground in manner of a pipit (*Anthus*). Gleans items from moss, bark and foliage in low vegetation, and sometimes from mossy ground; has been seen to make short sally-strikes to underside of grass.**Breeding.** No information.**Movements.** Resident.**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in High Andes of Bolivia and Argentina EBA and Peruvian High Andes EBA. Rare to uncommon, locally fairly common; distribution patchy, and clearly limited in areal extent because of narrow elevational range. Populations almost certainly declining, especially in Bolivia, as a result of habitat degradation and loss caused by grazing, burning, and firewood-gathering in timber-line region; *Polylepis* regeneration also greatly hindered by these activities. Important population of this species recently discovered in Carrasco National Park, in Bolivia, which is evidently fairly well protected. Occurs also in Machu Picchu Historical Sanctuary, in Peru.**Bibliography.** Collar & Andrew (1988), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Kessler & Herzog (1998), Parker & O'Neill (1980), Parker *et al.* (1982), Remsen (1985, 2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vuilleumier (1968), Walker (2001), Zimmer (1924, 1930).

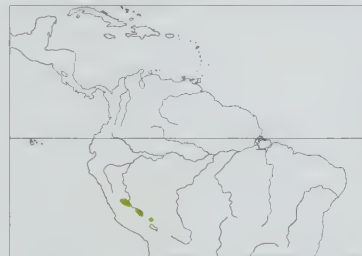
## 142. Many-striped Canastero

*Asthenes flammulata***French:** Synallaxe flammé **German:** Weißstrichelcanastero **Spanish:** Canastero Flamulado**Taxonomy.** *Synalaxis* [sic] *flammulatus* Jardine, 1850, "lofty table lands of the Andes" near Quito, 14,000 feet [c. 4270 m], Ecuador.Forms a superspecies with *A. virgata*, probably also including *A. maculicauda*. Possibly conspecific with former, which is its sister-species. Proposed race *pallida*, from N Peru, described as darker above with streaks whiter, paler below with reduced markings and more buffy flanks and undertail-coverts, is considered best synonymized with *taczanowskii*, although has been thought to be distinguishable by clearer back streaking and more of a buff-ochraceous wash on throat and neck. Four subspecies recognized.**Subspecies and Distribution.***A. f. multostriata* (P. L. Slater, 1858) - E Andes of Colombia (Norte de Santander S to S Cundinamarca).*A. f. quindiana* (Chapman, 1915) - C Andes of Colombia (Caldas S to Cauca).*A. f. flammulata* (Jardine, 1850) - W Andes of S Colombia (Nariño) S to extreme N Peru (N Cajamarca).*A. f. taczanowskii* (Berlepsch & Stolzmann, 1894) - Andes of N & C Peru (S Amazonas and S Cajamarca S to Ancash and Junín).**Descriptive notes.** 16-17 cm; 17-27 g. The most dramatically striped canastero. Nominate race has buff-whitish supercilium, rest of face dark brownish with buff to whitish flammulations; forehead bright tawny-brown or rufescent brown with dark brown stripes, these broadening and becoming the general colour of rest of crown, which has rufescent streaks; back to uppertail-coverts dark brown with conspicuous pale buff shaft streaks; wing-coverts dark brown with rufous margins,

remiges with reddish-rufous bases and dark fuscous tips; tail graduated, rectrices relatively narrow, especially distal halves, producing very "spiny" look, generally dark brown shafts and inner webs, rufous outer webs; chin and upper throat dull orange-buff to orange-rufous, blending to faintly flammulated and duller lower throat; breast and flanks whitish with conspicuous dark brown streaks, these becoming paler and less distinct on whitish belly; lower flanks and undertail-coverts rufescent brown with indistinct paler streaks; iris brown to dark brown; upper mandible black to dark horn, lower mandible black to dark brownish

with blue-grey to grey base; tarsus and toes light brown to olive to greenish-grey. Sexes alike. Juvenile has faint throat patch, less distinct streaks. Race *multostriata* is like nominate, but forehead darker chestnut, supercilium more ochraceous (not whitish), chin and throat deep rufous, ventral stripes with broader blackish margins, especially on flanks; *quindiana* differs from previous in having white chin, slightly paler throat, narrower ventral streaks; *taczanowskii* has throat pale buff to off white, ventral streaking restricted to upper breast and sides, extensive area in middle of breast nearly plain greyish-white (most individuals), also dorsal streaks narrower, forehead less tinged tawny. **VOICE.** Song in Colombia described as several whining notes followed by rattle; in Ecuador as fast, accelerating series of "tree" notes that usually end in trill, lasting c. 3 seconds; in N Peru as accelerating, buzzy "zhree-zree-ree-rrrr". Call a plaintive, mewing "peeow" or "tuuuuit"; also short "pyyt".**Habitat.** *Páramo* grassland in timber-line ecotone, usually with scattered bushes or *Espeletia* and rocks, often near woodland; mostly 3000-4500 m, locally down to 2800 m.**Food and Feeding.** Arthropods. Solitary or in pairs. Gleans items from ground or low vegetation, including from branches in bushes or low *Polylepis*.**Breeding.** No information.**Movements.** Resident.**Status and Conservation.** Not globally threatened. Uncommon to fairly common (mainly N races); not well known. Occurs in Cotopaxi National Park and Las Cajas National Recreation Area, in Ecuador. Suitable habitat generally limited in areal extent. Thought to be highly susceptible to overgrazing, but benefits from occasional burning of *páramo*.**Bibliography.** Bond (1945), Carriker (1933), Chapman (1926), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Hilty & Brown (1986), Koenen & Koenen (2000), Meyer de Schauensee (1945), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Peters & Griswold (1943), Remsen (2003a), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Salaman (1994), Stotz *et al.* (1996), Vuilleumier (1968), Zimmer (1930).

## 143. Junin Canastero

*Asthenes virgata***French:** Synallaxe de Junin **German:** Braunschwanzcanastero **Spanish:** Canastero de Junín**Taxonomy.** *Synallaxis virgata* P. L. Slater, 1874, Junin, central Peru.Forms a superspecies with *A. flammulata*, probably also including *A. maculicauda*. Possibly conspecific with former, which is its sister-species. Monotypic.**Distribution.** Andes of C & S Peru (Lima, Junin, Ayacucho, Cuzco, Puno).**Descriptive notes.** 17-18 cm; 22 g. Has broad but rather "messy" greyish-white supercilium; rest of face a mix of dark brown and greyish feathers with varying amounts of pale shaft streaking; crown very dark brown with fine light rufous streaks; back dark brown with pale buff streaks, broader and more conspicuous than those on crown, rump brown with only hint of streaks, uppertail-coverts slightly darker with conspicuous buff-brown streaks; wings rich brown, coverts with darker margins and some dull rufous shaft streaks, remiges with dark fuscous tips; tail graduated, rectrices stiffened basally and very pointed, barbs virtuallyabsent at tips of central rectrices, producing "spiny" appearance, central two pairs dull brown, darker along shaft, rest of feathers with progressively increasing amounts of rufous; throat light orange-rufous, some paler shaft streaks at lower margin; breast whitish buff-grey with darker brown edges, these palest at breast centre and darkest at sides, giving rather mottled to scaled appearance; belly whitish buff-brown with some grey tones, faintly streaked darker brown, sides and flanks rich brown with broad pale buff-brown streaks, vent and undertail-coverts becoming more rufescent with vague streaking; iris brown to dark brown; upper mandible grey to horn, lower mandible pale grey to greyish-pink; tarsus and toes greenish-olive to olive. Sexes alike. Juvenile undescribed. **VOICE.** Song 2-3 notes followed by descending trilled series: "tree, tree, tree treeeeheehheehhe", evidently very similar to that of *A. flammulata*; calls described as mewing "tuuuuiit" and complaining "eek".**Habitat.** *Páramo* and *puna* grassland, in timber-line ecotone, with lush, tall bunch-grasses, usually mixed with low shrubs (e.g. *Lupinus*), often or, perhaps, usually near *Polylepis* woodland; 3250-4500 m.**Food and Feeding.** Little known. Solitary or in pairs; gleans arthropods from ground or low vegetation.**Breeding.** No information.**Movements.** Resident; some downslope movement during snowstorms reported.**Status and Conservation.** Not globally threatened. Restricted-range species: present in Peruvian High Andes EBA and Junin Puna EBA. Rare to uncommon; poorly known. Occurs in Machu Picchu Historical Sanctuary. Suitable habitat generally limited in areal extent. Thought to be highly susceptible to overgrazing and burning.

On following pages: 144. Scribble-tailed Canastero (*Asthenes maculicauda*); 145. Sharp-billed Canastero (*Asthenes pyrrholeuca*); 146. Dusky-tailed Canastero (*Asthenes humicola*); 147. Creamy-breasted Canastero (*Asthenes dorbignyi*); 148. Berlepsch's Canastero (*Asthenes berlepschi*); 149. Steinbach's Canastero (*Asthenes steinbachi*); 150. Short-billed Canastero (*Asthenes baeri*); 151. Cipo Canastero (*Asthenes luizae*); 152. Patagonian Canastero (*Asthenes patagonica*).



**Bibliography** Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Koepcke (1954), O'Neill & Parker (1978), Parker & O'Neill (1980), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vuilleumier (1968), Walker (2001).

## 144. Scribble-tailed Canastero

### *Asthenes maculicauda*

**French:** Synallaxe à queue marbrée **German:** Roststirnecanastero **Spanish:** Canastero Estriado

**Taxonomy.** *Siptornis maculicauda* Berlepsch, 1901, Iquico, 4000 m, La Paz, Bolivia. Plumage pattern and biogeography indicate that this species is most closely related to *A. flammulata* and *A. virgata*; probably part of the superspecies formed by those. Disjunct population in Argentina may represent an undescribed race. Monotypic.

**Distribution.** Andes of S Peru (Puno), Bolivia (La Paz, Cochabamba, sight records also from Tarija) and NW Argentina (Sierra de Aconquija, in Tucumán and NC Catamarca).



**Descriptive notes.** 17 cm; 19 g. Large and conspicuously streaked canastero with unique tail pattern and lacking throat patch. Has buffy face with dark brown postocular stripe, some dark brown streaks on rear auriculars; rufous forehead blending to blackish-brown crown with conspicuous rufescent buff streaks, hindcrown dark brown with buff streaks; back and rump like hindercrown, streaks broader; wing-coverts dark brown with rufescent margins, remiges dark brownish fuscous with extensive rufous-chestnut bases; uppertail-coverts and central rectrices with distinctive pattern of ragged rufescent to buff-brown streaks matched by dark brown and

olive-brown streaks, rest of rectrices mostly dark fuscous with varying amounts of rufescent and olive-brown margins and streaks; throat pale greyish-buff, breast somewhat washed tawny, lower breast with band of blurry dark brown streaks, fading into belly, which is light buff-brownish; sides and flanks a mix of dark brown and light buff streaks, undertail-coverts light tawny-brown with vague darker streaks; iris brown; upper mandible grey to dark grey, lower mandible pale whitish-grey to grey, sometimes with darker tip; tarsus and toes olive to olive-green. Sexes alike. Juvenile has duller forehead, more mottled underparts, less distinct tail pattern. **Voice.** Song described as a series of "tree" notes that end in fast, descending trill; call a rising whistled "tuuiiii" or "tooeee".

**Habitat.** *Páramo* grassland; timber-line grassland with lush, tall bunch-grasses, often mixed with low shrubs; mostly 3000–4300 m, locally down to 2250 m.

**Food and Feeding.** Arthropods. Little known. Solitary or in pairs; probably gleans items from ground or low vegetation; noted sallying up into air to catch flying insects.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in High Andes of Bolivia and Argentina EBA. Rare to uncommon. Suitable habitat generally limited in areal extent, and greatly reduced by human use of fire in timber-line habitat. Thought to be highly susceptible to overgrazing and burning.

**Bibliography.** Bond (1945), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), Kessler & Herzog (1998), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olrog (1963a), Parker *et al.* (1982), de la Peña (1988), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vuilleumier (1968).

## 145. Sharp-billed Canastero

### *Asthenes pyrrholeuca*

**French:** Synallaxe vannier **German:** Dünnschnabelcanastero **Spanish:** Canastero Coludo  
**Other common names:** Lesser Canastero

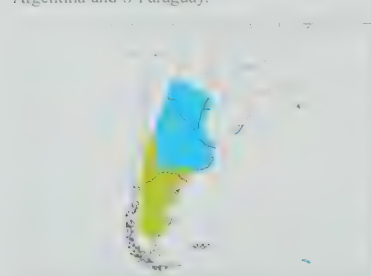
**Taxonomy.** *Sylvia pyrrholeuca* Vieillot, 1817, Paraguay.

No obvious close relatives within genus; *A. haeri* suggested by some authors as possible sister-species on basis of plumage similarities. Proposed Argentine races *leptastheniroides* (of which *affinis* is a synonym), described from Tucumán, and *flavogularis*, from Bahía Blanca (Buenos Aires) and Santa Cruz, represent seasonal plumage variation within race *sordida* and nominate, respectively. Two subspecies recognized.

**Subspecies and Distribution.**

*A. p. sordida* (Lesson, 1839) - breeds C & S Chile (Aconcagua S to Aisén, also sight records from Magallanes) and WC Argentina (S Mendoza, Neuquén, W Río Negro); some migrate N to NW Argentina and S Bolivia.

*A. p. pyrrholeuca* (Vieillot, 1817) - breeds C & S Argentina (SW Santiago del Estero, NE Córdoba, and from S La Pampa and SW Buenos Aires S to C Santa Cruz; some migrate N to E & NE Argentina and S Paraguay.



**Descriptive notes.** 14–15 cm; 12–14 g. Rather typical canastero without distinctive features, but bill relatively thin and pointed. Has rather plain grey-brown face, indistinct paler supercilium; crown dull brown, back and rump slightly paler, rather long uppertail-coverts slightly browner; wings mostly dull rufescent brown; tail graduated, central rectrices tapering to fairly pointed tips, central three feather pairs mostly dark fuscous brown, becoming darker towards tips, outer three pairs mostly dull rufous with dark inner webs; chin and upper throat variable, rufous to tawny, partly occluded by pale buff shaft streaks with dark

tips; lower throat and breast pale dull greyish-brown with ill-defined and very faint streaks on breast; belly pale dull buff-brown, flanks and undertail-coverts darker and tinged rufescent; iris brown; upper mandible slate-grey to black, lower mandible grey-horn; tarsus and toes slate-grey. Sexes alike. Juvenile lacks throat patch, has mottled breast. Race *sordida* has outer rectrices entirely rufous. **Voice.** Song a 2-note trill, "tsee-ee-ee-ee, tsee-ee-ee-ee", repeated at 1-second intervals; contact call a rising "sweep", given at intervals of c. 0.5–1 seconds.

**Habitat.** Arid montane scrub, arid lowland scrub, southern temperate grassland; dense arid scrub, shrub-steppe, hilly and rocky grassland, and even sand dunes with scattered low bushes; in non-breeding range also in tall grass, marshy areas dominated by *Polygonum lapathifolium*, and Chaco scrub. Mostly sea-level to 2000 m, locally to 3000 m.

**Food and Feeding.** Recorded dietary items are Hemiptera (Membracidae) and Coleoptera (Carabidae, Chrysomelidae). Forages solitarily or in pairs, and often in mixed-species flocks. Evidently gleans arthropods primarily from low vegetation, and thus is less terrestrial in its feeding than are most congeners.

**Breeding.** Season during austral spring-summer; eggs in Sept-Dec, nestlings in Nov and fledglings in Feb; possibly double-brooded. Presumably monogamous. Nest an interwoven spherical to globular mass c. 20–30 cm in diameter, made of small twigs, some as long as 15 cm, entrance near top or on side, interior chamber c. 6 × 13 cm, lined with soft plant material, hair and feathers, placed 0.4–1 m up in crotch of branches in bush; also, two nests reported slightly underground, one c. 30 cm under flat rock and with almost no nesting material, the other made of hair and sited at end of rodent burrow c. 30 cm long. Clutch 2–4 eggs.

**Movements.** Partly resident; an unknown proportion of population migrates N during austral winter, reaching S Bolivia (*sordida*) and S Paraguay (nominate). Some post-breeding downslope movement of uncertain extent in N & W of range.

**Status and Conservation.** Not globally threatened. Fairly common to abundant in most of range. Habitat typically subjected to at least moderate grazing pressure.

**Bibliography.** Anon. (2003d), Araya & Chester (1993), Canevari *et al.* (1991), Chebez *et al.* (1999), Chesser (1994), Contreras (1979b), Cory & Hellmayr (1925), Cuello (1985), Fjeldså & Krabbe (1990), Fraga & Narosky (1985), Grigera *et al.* (1996), Hayes (1995), Howell & Webb (1995c), Johnson (1967), Mazar Barnett & Pearman (2001), Narosky (1971), Narosky *et al.* (1983), Nores & Yzurieta (1975), Nores *et al.* (1983), Olrog (1958, 1962, 1963a), Pearman (1990, 1994e), de la Peña (1987, 1988), Pereyra (1951), Rasmussen *et al.* (1992), Remsen & Traylor (1989), Ridgely & Tudor (1994), Salvador (1988, 1990), Smyth (1928), Stotz *et al.* (1996), Vuilleumier (1993a), Vuilleumier, Capparella & Lazo (1992), Wetmore (1926), Zotta (1936).

## 146. Dusky-tailed Canastero

### *Asthenes humicola*

**French:** Synallaxe à queue noire **German:** Rostschultercanastero **Spanish:** Canastero Colinegro

**Taxonomy.** *Synallaxis* [sic] *humicola* Kittlitz, 1830, near Valparaíso, Chile.

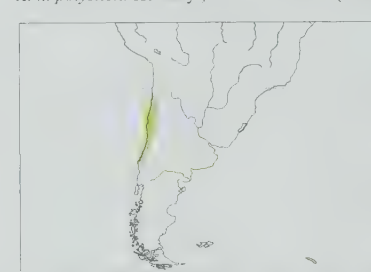
Plumage similarities and biogeography suggest that sister-species is *A. patagonica*. Three subspecies recognized.

**Subspecies and Distribution.**

*A. h. goodalli* Marin *et al.*, 1989 - N Chile (SW Antofagasta).

*A. h. humicola* (Kittlitz, 1830) - NC Chile (Atacama S to N Maule); old record from W Argentina (N Mendoza) requires confirmation.

*A. h. polysticta* Hellmayr, 1925 - SC Chile (S Maule, Concepción, Arauco, Malleco).



**Descriptive notes.** 14–15 cm; 18–24 g. One of the darkest and dullest of all canasteros. Nominate race has narrow supercilium and supraloral spots whitish, rest of face dark grey-brown with inconspicuous paler streaks; crown dark brown, faintly flammulated, back slightly paler, rump and uppertail-coverts faintly tinged dull rufescent; wings dull brown like back, except for dull rufous shoulder area; tail graduated, central rectrices slightly pointed, colour like back but becoming dark fuscous toward tips, rest of rectrices fuscous blackish, increasingly slightly paler on outer webs; throat whitish, with blackish flecking

increasing in density towards upper breast, where becomes short streaks; rest of breast brownish-grey with faint pale streaking, belly paler with virtually no hint of streaks, flanks rufescent brown, undertail-coverts darker rufous-brown; iris brown; upper mandible black, lower mandible grey with black tip; tarsus and toes greenish. Sexes alike. Juvenile has streaking on underparts even fainter than adult. Race *goodalli* has more slender bill, less pronounced breast streaks, more streaks on face, darker crown, brighter cinnamon on shoulder, flanks and undertail-coverts; *polysticta* is like nominate, but flanks and undertail-coverts duller brown, ventral spotting more extensive. **Voice.** Song described as a loud clear trill; birds also give a ticking "ts-ts-ts-ts-ts-ts".

**Habitat.** Arid montane scrub, arid lowland scrub; dense *matorral* scrub, and semi-arid hillside scrub dominated by *Acacia cavenia*; from near sea-level to 1200 m.

**Food and Feeding.** Little known. Solitary or in pairs. Apparently gleans arthropods from low foliage or ground; usually within 1 m of ground.

**Breeding.** Reported to have two broods per year, one in Aug, a second in Nov; eggs in Jan in Argentina. Presumably monogamous. Nest a conspicuous elongated, vertical or upward-angled cylinder c. 25–35 cm long, made of twigs, usually thorny ones, external entrance tube with hole at side near top, inner chamber c. 8 cm in diameter and with pad of plant material and feathers, placed in low bush. Clutch 3–4 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Central Chile EBA. Uncommon to fairly common. In most of range its habitat is subject to at least moderate grazing and other disturbance. Occurs in several protected areas, e.g. Cerro La Campana National Park, in Chile.

**Bibliography.** Araya & Chester (1993), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Johnson (1967), Marin *et al.* (1989), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olrog (1963a), de la Peña (1987, 1988), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wetmore (1926).

## 147. Creamy-breasted Canastero

### *Asthenes dorbignyi*

**French:** Synallaxe d'Orbigny **German:** Rostbüzelcanastero **Spanish:** Canastero Rojizo  
**Other common names:** Black-winged Spinetail; Pale-tailed Canastero (*huancavelicae*); White-tailed Canastero (*usheri*)

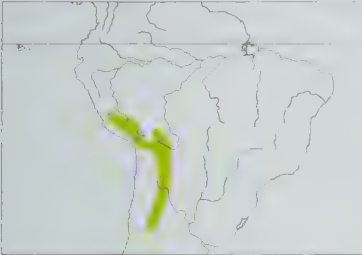
**Taxonomy.** *Bathmidura Dorbignyi* Reichenbach, 1853, Palca, Cochabamba, Bolivia.



Forms a species group, and possibly a superspecies, with *A. herlepsi*, also including probably *A. steinbachi* and *A. baeri* and possibly *A. patagonica*. May be conspecific with first of those, and considered by some to be conspecific with second of them. In some aspects of plumage, tail structure, behaviour, voice and nest structure, all are more similar to *Phacellodomus* (especially *P. striaticeps*) and possibly better placed in that genus. Races *huancavelicae* and *usherii*, with distinctive vocal differences from others, sometimes treated as one or two separate species. Brown-backed, paler-faced populations from Chile and W Bolivia are probably intergrades between *arequipae* and either *consobrina* or nominate. In addition, two highly distinctive populations in C Peru (Ancash, Lima, Huánuco and Ayacucho) represent undescribed races or possibly separate species. Present taxonomic treatment traditional but considered unsatisfactory; formal revision required. Five subspecies recognized.

**Subspecies and Distribution**

*A. d. huancavelicae* Morrison, 1938 - Andes of W & SC Peru (locally in Ancash, also Huancavelica and Ayacucho).  
*A. d. usherii* Morrison, 1947 - Andes of SC Peru (Aurimac).  
*A. d. arequipae* (P. L. Selater & Salvin, 1869) - Andes of SW Peru (Arequipa S to Taena and S Puno), N Chile (Tarapacá) and W Bolivia (SW La Paz, NW Oruro).  
*A. d. consobrina* Hellmayr, 1925 - Andes of SW Bolivia (SE La Paz, NE Oruro, N Potosí).  
*A. d. dorbignyi* (Reichenbach, 1853) - Andes of C & S Bolivia (Cochabamba S to E Potosí and Tarija) and NW Argentina (Jujuy S to Mendoza).



blackish, some rufous margins on outer pairs; centre of throat orange-rufous with some black feather bases; rest of throat, breast and belly dull creamy or creamy whitish, brightest on belly (some individuals evidently retain some faint barring of juvenile plumage on breast); flanks tawny-rufous, undertail-coverts rufous; iris brown to light grey; upper mandible black to dark grey, lower mandible blackish, usually with grey or pinkish base; tarsus and toes dull blue-grey to black. Sexes alike. Juvenile lacks throat patch, has faint mottling on breast and belly. Race *consobrina* is like nominate, but blacker remiges nearly lack rufous bases (no conspicuous wingband), back slightly darker, darker rufous on wing-coverts, rump, outer webs of rectrices, flanks and undertail-coverts; *arequipae* is larger, with deeper bill, darker above (especially crown), blacker lores and auriculars, lacks rufous wingband, has larger, more conspicuous throat patch, more extensive rufous in outer rectrices; *usherii* is paler, brown above without rufous on rump, pale greyish below with faint scaling on breast, has whitish-buff outer rectrices; *huancavelicae* is superficially like nominate in being rather small and smaller-billed, but duller and slightly darker above, less rufous in wings, darker face, paler throat patch, whitish-buff to pale rufous outer webs of outer rectrices. **VOICE.** Song (nominate race) c. 2-3-5 seconds long, a series of high notes, first ascending and accelerating, then descending and slowing, sometimes ending in explosive trill, sometimes introduced by various additional slower series of notes and trills; gives antiphonal duet; contact call a rising, penetrating "shreep!" or "wheel" at c. 2-5-second intervals. Race *arequipae* song lacks introductory notes, is shorter (c. 3 seconds), described as descending series of rattling, ringing notes, often quavering; alarm call described as a series of descending notes, "kee, kee, kî, kee, kee". Songs of *huancavelicae* and *usherii* reported as high-pitched, intense trills lasting c. 2 seconds, thus very different from other taxa.

**Habitat.** Arid montane scrub; a variety of arid scrubby habitats, often with columnar cacti, especially in gorges and on steep slopes, in hilly or mountainous terrain; also in or near *Polylepis* woodland (*arequipae*). Sometimes found in vicinity of human settlements. At 1800-4800 m; nominate race down to 700 m in non-breeding season.

**Food and Feeding.** Recorded dietary items are ants and seeds. Forages singly or in pairs. Evidently gleans arthropods mainly from ground, also from low vegetation.

**Breeding.** Season presumably during austral spring-summer; eggs in Nov-Dec in Peru and in Nov and Feb in Argentina; fledglings in Jan-Feb in Bolivia. Presumably monogamous. Nest a large cylindrical mass, highly variable in size (25-400 cm long, diameter 23-60 cm), of usually thorny sticks woven together, tapering towards external entrance tube at top, spherical inner chamber 6-10 cm in diameter, lined all the way around with feathers, hairs and plant down (possibly only in colder areas) or with pad of plant material, hair and feathers; placed in bush, small tree, or thorny plant such as columnar cactus (e.g. *Pseudoespostoa*, *Cylindropuntia*) or *Puya raimondii*. One clutch documented, of 2 eggs.

**Movements.** Mainly resident; some post-breeding downslope movement in Argentina.  
**Status and Conservation.** Not globally threatened. Races *huancavelicae* and *usherii* Vulnerable. Fairly common to common in much of range. Tolerates moderate habitat degradation, including severe overgrazing, and found in vicinity of houses and agriculture. In C Peru, the undescribed taxa (both apparently rare) may also merit the conservation status of Vulnerable; the combined total population of those, along with *huancavelicae* and *usherii*, is estimated at 2500-10,000 individuals, and declining as a result of habitat destruction and degradation. One of the undescribed taxa occurs in Huascarán National Park, in Ancash. Surveys needed in order to locate all forms and to assess their ecological and conservation requirements, as well as to determine their taxonomic status.

**Bibliography.** Araya & Chester (1993), Begazo *et al.* (2001), Canevari *et al.* (1991), Chebez *et al.* (1999), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Contreras (1980a), Cory & Hellmayr (1925), Dorr (1957), Fjeldså (1987), Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), Fraga & Narosky (1985), Hoy (1980), Johnson (1967), Krabbe *et al.* (1996), Mazar Barnett & Pearman (2001), Morrison (1938, 1939, 1947, 1948), Narosky *et al.* (1983), Navas & Bó (1987), Olrog (1963a), Pacheco *et al.* (1996a), Parker *et al.* (1982), Pearman (1990), de la Peña (1987, 1988), Remsen (2003a), Remsen & Traylor (1989), Ribero (1991), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stotz *et al.* (1996), Torres-Mura (1998), Traylor (1950), Wege & Long (1995), Wetmore (1926).

148. Berlepsch's Canastero

*Asthenes berlepschi*

**French:** Synallaxe de Berlepsch **Spanish:** Canastero de Berlepsch  
**German:** Cordillera Real-Canastero

**Taxonomy.** *Siptornis berlepschi* Hellmayr, 1917, Chilcani, La Paz, Bolivia.  
Forms a species group, and possibly a superspecies, with *A. dorbignyi*, probably also with *A. steinbachi* and *A. baeri* and possibly with *A. patagonica*; may be conspecific with *A. dorbignyi*, with treatment as species based more on historical momentum than on taxonomic analysis. In some aspects of plumage, tail structure, behaviour, voice and nest structure, all are more similar to *Phacellodomus* (especially *P. striaticeps*) and possibly better placed in that genus. Monotypic.  
**Distribution.** Consata Valley, in Andes of NW Bolivia (NC La Paz).



**Descriptive notes.** 15-16 cm. Has inconspicuous greyish supercilium, blackish lores and auriculars; crown warm brown, becoming paler and duller on back, rufous rump and uppertail-coverts; wings blackish, coverts edged and tipped dark rufous, tertials thinly edged dark rufous; tail graduated, rectrices very slightly pointed, outer two pairs rufous, next pair partly rufous, rest blackish; throat and underparts creamy whitish, centre of throat with hint of rufous (barely evident), breast with faint dark scaling, flanks and undertail-coverts rufous; bare-part colours not well known, but probably iris brown, upper mandible dark, lower mandible mainly grey, tarsus and toes blue-grey. Distinguished from very similar race *arequipae* of *A. dorbignyi* by lack of throat patch, broader rufous edges of wing-coverts and tertials, more rufous on outer rectrices. Sexes alike. Juvenile has dark-tipped breast feathers producing scaly appearance. **VOICE.** Song a trill similar to that of *A. dorbignyi*.

**Habitat.** Semi-arid montane scrub (*Baccharis pentlandii*) and patches of vegetation around human habitations, pastures and farms; recently reported also from degraded *Polylepis* woodland, and from scattered stands of introduced eucalyptus (*Eucalyptus*). At 2300-3700 m.

**Food and Feeding.** Little known. Solitary or in pairs; evidently gleans arthropods from ground and perhaps low vegetation.

**Breeding.** Season probably during austral spring-summer. Nest placed in tree. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in High Andes of Bolivia and Argentina EBA. Not well known; appears to be common, but recorded from only a few localities within tiny range. Observations cover area of c. 200 km<sup>2</sup>; possibly present elsewhere. N of R Consata, but fieldwork needed to determine this. In a 1991 survey, 3-4 nests found c. 500 m apart in area of eucalyptus trees separating agricultural fields. Tolerates strong habitat degradation; persists locally in absence of native vegetation, and has probably done so for thousands of years (back to at least Incan times). Nevertheless, its extremely small range places it at some risk.

**Bibliography.** Collar *et al.* (1992), Cory & Hellmayr (1925), Fjeldså & Krabbe (1989, 1990), Herzog *et al.* (1997), Lowen & Kennedy (1999), Maijer (1995), Mazar Barnett & Kirvan (2002c), Mazar Barnett *et al.* (1997), Remsen & Traylor (1989), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wege & Long (1995).

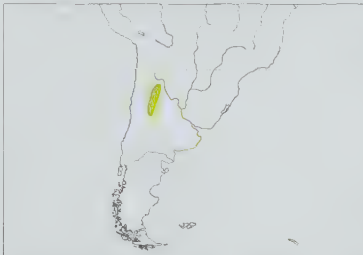
149. Steinbach's Canastero

*Asthenes steinbachi*

**French:** Synallaxe marron **German:** Weißkinncanastero **Spanish:** Canastero Castaño  
**Other common names:** Chestnut Canastero

**Taxonomy.** *Siptornis steinbachi* Hartert, 1909, Cachi, 2500 m, Salta, Argentina.  
Plumage pattern and biogeography suggest that this is part of the group, or possibly superspecies, formed by *A. dorbignyi* and *A. berlepschi*, also including probably *A. baeri* and possibly *A. patagonica*; considered by some authors to be a race of *A. dorbignyi*. In some aspects of plumage, tail structure, behaviour, voice and nest structure, all are more similar to *Phacellodomus* (especially *P. striaticeps*) and possibly better placed in that genus. Some, however, have predicted a closer relationship to *A. humicola*. Race *neiffi* of *A. baeri* originally described as a race of present species. Monotypic.

**Distribution.** Andes of W Argentina, from W Salta S to Mendoza.



**Descriptive notes.** 15-16 cm; 14-20 g. Rather greyish canastero lacking streaks and throat patch. Has mostly greyish-brown face, paler supercilium; crown and back dull grey-brown, greyest on nape, blending to chestnut rump and rufous-chestnut uppertail-coverts; wings mostly rufous, distal halves of remiges dark fuscous; tail graduated, central rectrices gradually tapering to slightly pointed tips, outer feathers rufous, rest blackish fuscous with rufescent margins on outer webs; chin and throat whitish with faint dusky tips, breast and belly greyish, flanks and undertail-coverts tawny-rufous; iris brown to dark brown; bill black to dark brown; tarsus and toes brown to black. Sexes alike. Juvenile undescribed. **VOICE.** Not described.

**Habitat.** Arid montane scrub, often in ravines, and *monte* woodland; 500-3000 m.

**Food and Feeding.** Little known. Solitary or in pairs; presumably gleans arthropods from ground or low vegetation.

**Breeding.** Season presumably during austral spring-summer; eggs in Nov and Jan. Presumably monogamous. Nest is a globular mass c. 34 cm tall and 28 cm wide, made of sticks, mostly thorny ones, entrance on upper side leads to interior nest chamber lined with grasses, soft plant matter, and feathers; 2-5 m up in bush. Clutch 2-3 eggs.

**Movements.** Mainly resident; some post-breeding downslope movement.

**Status and Conservation.** Not globally threatened. Currently considered a species of Lower Risk/Least Concern. Restricted-range species: present in High Andes of Bolivia and Argentina EBA. Rare to uncommon. In some parts of range, scrub habitat has been altered by human settlement and conversion to agriculture; grazing by domestic livestock possibly also a threat locally. On other hand, large areas of habitat throughout range remain in suitable condition.

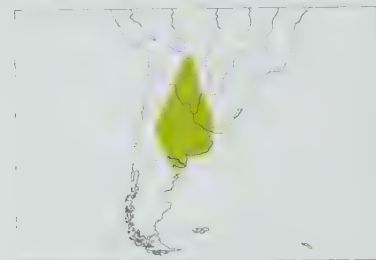
**Bibliography.** Anon. (2003), Canevari *et al.* (1991), Chebez *et al.* (1999), Collar *et al.* (1994), Contreras (1979f, 1980a), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas & Bó (1987), Olrog (1962, 1963a), de la Peña (1988), Ridgely & Tudor (1994), Salvador (1990, 1992), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wetmore (1926).



## 150. Short-billed Canastero

*Asthenes baeri*

French: Synallaxe à bec court German: Kurzschnabelcanastero Spanish: Canastero Chaqueño

**Taxonomy.** *Siptornis baeri* Berlepsch, 1906, Cosquín, Córdoba, Argentina.Suggested by some authors as being possibly sister-species to *A. pyrrholeuca* on basis of plumage similarities. Others point out that voice, nest structure, plumage and tail morphology all indicate that it is part of a group, or possibly superspecies, formed by *A. dorbignyi* and *A. berlepschi*, probably with *A. steinbachi* and possibly with *A. patagonica*; in some aspects of plumage, tail structure, behaviour, voice and nest structure, all are more similar to *Phacellodomus* (especially *P. striaticeps*) and possibly better placed in that genus. Races *chacoensis* and *neiffi* (latter originally described as a race of *A. steinbachi*) perhaps no more than extremes in clinal variation, and species possibly monotypic; re-evaluation of geographical variation desirable. Three subspecies tentatively recognized.**Subspecies and Distribution.***A. b. chacoensis* Brodkorb, 1938 - extreme SC Bolivia (SC Santa Cruz) and NW Paraguay.*A. b. baeri* (Berlepsch, 1906) - S Bolivia (E Tarija), W Paraguay, N & C Argentina (Salta, W Formosa and W Corrientes S to E Mendoza, La Pampa, NE Rio Negro and S Buenos Aires), extreme SE Brazil (SW Rio Grande do Sul) and W Uruguay.*A. b. neiffi* (Contreras, 1980) - W Argentina (NW & C Mendoza, W Córdoba, N & C San Luis).**Descriptive notes.** 14-15 cm; 10-18 g. Rather pale, plain, short-billed canastero, in many ways more similar in plumage to sympatric *Phacellodomus sibilatrix* than to congeners. N nominate race has indistinct broad greyish supercilium, rest of face dull greyish-brown; crown dull grey-brown, back slightly greyer, rump and uppertail-coverts tinged brown; wings mostly dull greyish-brown, coverts and remiges with paler grey edgings; tail graduated, central rectrices relatively narrow, tips slightly pointed, inner two pairs mostly dark brownish fuscous, rest mostly dull rufous; chin pale greyish; upper throat orange-tawny, becoming darker along lower margin, where some dark feather bases show; lower throat and rest of underparts pale dull greyish, flanks and undertail-coverts pale rufescent; iris brown to greyish-brown; upper mandible black to dark grey or dark brown, lower mandible grey to pinkish-grey; tarsus and toes grey to brownish-grey. Sexes alike. Juvenile lacks or has less distinct throat patch, has mottled upper breast. Race *chacoensis* is very slightly paler than nominate, with whiter supercilium, more extensively rufous tail; *neiffi* is apparently significantly larger than other races.

VOICE. Song a few introductory notes followed by long, fast trill of mechanical, dry notes; terminal trill frequently given without introductory notes. Also series of short, buzzing "pzzz" phrases.

**Habitat.** Arid lowland scrub; Chaco scrub and woodland, and *monte* woodland; from sea-level up to 1300 m.**Food and Feeding.** Recorded items include ants, Orthoptera (including Acrididae), Diptera, Coleoptera (including Cerambycidae), Hymenoptera, Dermaptera. Forages singly or in pairs. Apparently gleans arthropods from branches and twigs of low vegetation, occasionally from ground.**Breeding.** Season during austral spring-summer; eggs in Oct-Jan and nestlings in Oct. Presumably monogamous. Nest an oval mass c. 24-35 × 15-20 cm, usually taller than wide, made of spiny branches, entrance hole at top, curving tunnel leading to interior chamber of c. 10 cm diameter, floor a bed of feathers, hair, twigs, occasionally also flowers, moss or lichens; placed 1-5-3 m up in fork of branches in bush or low tree. Clutch 3 eggs, sometimes 4, but 5 recorded in Argentina (Mendoza); incubation period 14-15-5 days; nestling period 14 days.**Movements.** Resident.**Status and Conservation.** Not globally threatened. Uncommon to fairly common. Occurs in several protected areas. Habitat occupied by this species is subject to at least moderate disturbance and grazing in large parts of its range.**Bibliography.** Anon. (2003d), Belton (1984), Cabot (1990), Canevari *et al.* (1991), Chebez *et al.* (1999), Contreras (1980a), Cory & Hellmayr (1925), Cuello (1985), Fraga & Narosky (1985), Guerrero & Arambiza (2001), Hoya *et al.* (1995), Kratter *et al.* (1993), Mazar Barnett & Pearman (2001), Mezquida (2001b), Narosky *et al.* (1983), Nares *et al.* (1983), Ochoa (1971), Pacheco *et al.* (1996a), Partridge (1953), de la Peña (1987, 1988, 1995), Pinto (1978), Remsen (2003a), Remsen & T aylor (1983, 1989), Ridgely & Tudor (1994), Short (1975), Sick (1993, 1997), Stotz *et al.* (1996), Wetmore (1926), Zotta (1940).

## 151. Cipo Canastero

*Asthenes luizae*

French: Synallaxe du Cipo German: Minas Gerais-Canastero Spanish: Canastero de Cipo

**Taxonomy.** *Asthenes luizae* Viellard, 1990, Alto da Boa Vista, 1100 m, near Jaboticatubas, Serra do Cipó, Minas Gerais, Brazil.Relationships uncertain; plumage most similar to that of *A. patagonica*, but voice most similar to that of *A. dorbignyi*. Monotypic.**Distribution.** EC & NC Minas Gerais, in SE Brazil.**Descriptive notes.** 17 cm; 25-5-30-5 g. Rather short-billed canastero with medium-length tail. Has narrow whitish supercilium, dark brown or blackish-brown eyeline, rest of face grey-brown with fine blackish streaks, some narrow whitish streaks on auriculars; crown warm brown, back and rump greyish-brown; wings dull dark brown, outer five primaries with dull whitish-brown narrow edges on basal half forming pale panel, primary coverts dark fuscous; tail graduated, central rectrices tapering somewhat at tip, remainder with rounded tips, central pair dark brown, rest chestnut-rufous; chin and centre of upper throat white with fine black streaks; throat side and underparts grey, slight dusky olive wash on belly centre, deeper on rear flanks, more chestnut on undertail-coverts; in worn plumage looks duller, more evenly greyer overall, with colder and less markedbrown tones; iris blackish to brown; upper mandible dark grey with black tip, lower mandible similar or with paler grey base; tarsus and toes dull pinkish or grey. Sexes alike. Juvenile undescribed. **VOICE.** Song a series of usually 11 descending notes, fades towards end, lasts c. 3 seconds; contact call a high-pitched, metallic "jlip", repeated at 2-second intervals.**Habitat.** *Campo rupestre*: rocky outcrops with bushy vegetation in grassland; 900-1500 m.**Food and Feeding.** Arthropods. Forages singly or in pairs; gleans items from ground or rocks.**Breeding.** Presumably breeds during austral spring-summer; dependent young observed in Dec. Territory estimated at 100-300 m<sup>2</sup>. No further information.**Movements.** Resident.**Status and Conservation.** **ENDANGERED.** Restricted-range species: present in Central Brazilian Hills and Tablelands EBA. Discovered as recently as 1985, and not formally described until 1990. Currently known from six localities in Minas Gerais, including Serra do Cipó National Park (where found in 1997) and Pico do Itambé State Park. Fairly common in Serra do Intendente (Ribeirão do Campo waterfalls), and not uncommon at type locality (a little NE of Jaboticatubas); six individuals recorded in 1-5 km in Pico do Itambé. Total population estimated at 2500-10,000 individuals in late 1990s; thought to be declining, mainly as a result of habitat destruction and degradation. Considered to be at risk because of tiny geographical range and insular nature of habitat; grazing and burning of habitat potential threats. Possible brood parasitism by Shiny Cowbird (*Molothrus bonariensis*), apparently a recent invader of the region, not hitherto recorded for this species but could have serious effects (other *Asthenes* canasteros are occasional hosts for this cowbird). On the other hand, discovery of this species in Mar 2000 at Campina do Bananal, 170 km N of other known localities and N of Jequitinhonha Valley, gives cause for optimism. Additional fieldwork in region, where much suitable habitat still exists, may reveal that it is more widespread than hitherto known, and may lead to its threat category being downgraded.**Bibliography.** de Andrade *et al.* (1998), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cordeiro *et al.* (1998), Ferreira de Vasconcelos & Sá (2002), Ferreira de Vasconcelos *et al.* (2002), Machado *et al.* (1998), Melo-Júnior *et al.* (2001), Pearman (1990), Ridgely & Tudor (1994), Sick (1993, 1997), da Silva (1995a), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Studer & Teixeira (1993), Viellard (1990b), Vuilleumier, LeCroy & Mayr (1992).

## 152. Patagonian Canastero

*Asthenes patagonica*

French: Synallaxe de Patagonie German: Fleckenkehlcanastero Spanish: Canastero Patagón

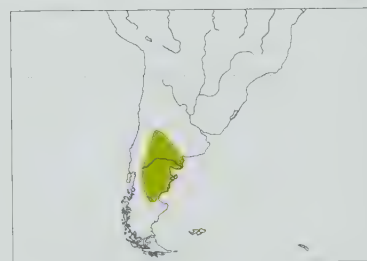
**Taxonomy.** *Synallaxis patagonica* d'Orbigny, 1839, Rio Negro, Patagonia, Argentina.Plumage similarities and biogeography have suggested to some authors that sister-species is *A. humicola*. Voice, tail structure, nest structure, foraging behaviour and habitat, however, indicate that it may be more closely related to the group, possibly a superspecies, formed by *A. dorbignyi* and *A. berlepschi* and also including probably *A. steinbachi* and *A. baeri*; in some aspects of plumage, tail structure, behaviour, voice and nest structure, all of these are more similar to *Phacellodomus* (especially *P. striaticeps*) and possibly better placed in that genus. Monotypic.**Distribution.** S Argentina, from S Mendoza, La Pampa and S Buenos Aires S to N Santa Cruz.**Descriptive notes.** 14-15 cm; 14-19 g. Relatively small, plain and dull canastero. Has light greyish-brown, almost plain face, hint of paler supercilium and darker postocular line; crown and upperparts light grey-brown, wings somewhat browner with more rufescent edgings; tail graduated, central rectrices slightly pointed, dull grey-brown at base, otherwise mostly blackish; chin and throat greyish-white, blackish flecking and streaking on throat; breast dull pale greyish, blending to pale buff-grey upper belly, tawny flanks and lower belly, dull tawny-rufous undertail-coverts; bare-part colours not documented, probably dark. Sexes alike. Juvenile undescribed.**VOICE.** Song a loud, penetrating trill on single pitch, "tree-ee-ee-ee-ee-ee...", lasts c. 4 seconds, occasionally duets; call a single loud, sharp note, often repeated.**Habitat.** Arid lowland scrub; semi-arid scrub (e.g. *Atriplex*, *Condalia microphylla*, *Schinus*) on flats, slopes or washes; from near sea-level to 700 m.**Food and Feeding.** Little known. Arthropods, including Coleoptera, Hymenoptera, Diptera, spiders; also seeds. Evidently usually solitary; appears to glean arthropods from ground under bushes or from low vegetation.**Breeding.** Season during austral spring-summer; eggs in Oct-Dec and nestlings in Oct-Nov. Presumably monogamous. Nest a spherical mass c. 40-50 cm long, 20-30 cm wide, of thorny sticks, some as long as 30 cm, external tubular side entrance 15-40 cm long, interior chamber 12-15 cm in diameter, with pad of soft plant material, hair and feathers, placed 1-6 m above ground in bush. Clutch 3 eggs, sometimes 4.**Movements.** Resident.**Status and Conservation.** Not globally threatened. Uncommon to fairly common. Habitat in much of its range subjected to at least moderate grazing.**Bibliography.** Anon. (2003d), Canevari *et al.* (1991), Cawell & Hamilton (1961), Chebez *et al.* (1999), Contreras (1980e), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Fraga & Narosky (1985), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas & Bö (1986, 1987), Nares *et al.* (1983), Olrog (1963a), Pacheco *et al.* (1996a), Pearman (1990), de la Peña (1988), Ridgely & Tudor (1994), Stotz *et al.* (1996), Vuilleumier (1993a), Wetmore (1926).









PLATE 23

inches 3  
cm 8



# Genus *PHACELLODOMUS* Reichenbach, 1853

## 153. Rufous-fronted Thornbird

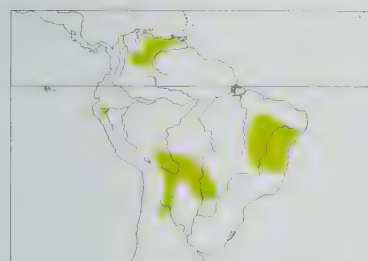
### *Phacellodomus rufifrons*

**French:** Synallaxe à front roux **German:** Rotstirn-Bündelnister **Spanish:** Espinero Común  
**Other common names:** Common/Plain Thornbird, Plain-fronted/Red-fronted Thornbird; Northern Thornbird (*inornatus*, *castilloi*); Marañon/Peruvian Thornbird (*peruvianus*)

**Taxonomy.** *Anabates rufifrons* Wied, 1821, Riberão de Ressaca, Bahia-Minas Gerais border, Brazil. Considered by some authors to form a superspecies with *P. sibilatrix*, but the two overlap considerably in distribution, and differ in body size and nest structure. N races *inornatus* and *castilloi* sometimes treated as constituting a separate species; *peruvianus* possibly also a separate species. Proposed race *fargoi*, from Paraguay and S Brazil (Mato Grosso), described as browner above and with flanks and undertail-coverts more fulvous, but found to be not diagnosable by these characters; treated as synonym of *sincipitalis*. Six subspecies recognized.

#### Subspecies and Distribution.

*P. r. inornatus* Ridgway, 1887 - NC Venezuela (SE Falcón, Yaracuy and Carabobo E to Miranda).  
*P. r. castilloi* Phelps, Jr. & Avelado, 1987 - W & C Venezuela (Lara, Portuguesa, Barinas and Apure E to Sucre and Monagas) and NE Colombia (Boyacá, Arauca, Casanare, Vichada, NE Meta).  
*P. r. peruvianus* Hellmayr, 1925 - extreme S Ecuador (S Zamora-Chinchipe) and N Peru (upper Marañón Valley in Amazonas, Cajamarca and San Martín).  
*P. r. sincipitalis* Cabanis, 1883 - E Bolivia (Beni, Santa Cruz, Tarija), S Brazil (S Mato Grosso), NC Paraguay and NW Argentina (Jujuy, Salta, Tucumán).  
*P. r. specularis* Hellmayr, 1925 - NE Brazil (Pernambuco).  
*P. r. rufifrons* (Wied, 1821) - E Brazil (S Maranhão, S Piauí, Bahia, N Minas Gerais).



**Descriptive notes.** 16-17 cm; 18-31 g. Rather plain, nondescript, arboreal furnariid. Nominate race has dull buff supercilium continuing anteriorly to supraloral area, dark greyish lores, dark brown postocular area; rest of face light buff-brown; forehead dark rufous, crown dark brownish with some paler shaft streaks, back to uppertail-coverts dull brown, slightly paler than crown; wing-coverts and remiges dull brown, darker brown primary coverts; tail graduated, dull brown; fairly uniform brownish-white below, darker brownish at sides, richer brownish on flanks, rufescent-tinged undertail-coverts; iris brown to grey to greyish-white (source of variation uncertain, possibly age-related); upper mandible blackish to dark grey, lower mandible grey to blue-grey; tarsus and toes grey. Sexes alike. Juvenile lacks rufous on forehead, upperparts mottled. Race *sincipitalis* is like nominate, but back slightly brighter brown, rump, uppertail-coverts and flanks slightly brighter, more rufescent, outer rectrices slightly more rufous; *peruvianus* has rufous of forehead more extensive and slightly paler, flanks brighter and more extensively fulvous; *specularis* is distinctive in having rufous patch in remiges, also more brownish above than nominate, deeper and more extensive rufous on crown, rufescent outer rectrices; *inornatus* lacks rufous on forecrown, is the plainest race; *castilloi* is like previous, but back and wing-coverts more olivaceous, less rufescent, face more greyish (less brownish), tail, thighs and undertail-coverts more brownish. Voice. Song a loud, strained series of shrill "chit" notes, slowly accelerating and intensifying, then slowing and ending abruptly, length variable, up to 10 seconds, often as antiphonal duet; repeated frequently, and often given from near or inside nest. Often long bouts of twittering, weak notes that may continue for several minutes. Alarm a sharp "chip" or "chek".

**Habitat.** Arid lowland scrub, tropical deciduous forest, *cerrado*, arid montane scrub, secondary forest, gallery woodland, *llanos*, savanna, and open scrub with scattered trees; locally in open semi-humid woodland; key habitat components seem to be dense thickets and at least some scattered trees for nesting. Mostly from near sea-level to 1300 m, locally to 2000 m.

**Food and Feeding.** Reported dietary items are Coleoptera (including families Curculionidae, Carabidae), Orthoptera (including Acrididae), Hemiptera, ants, and spiders. Usually in pairs, or in groups of 3-10 individuals, including nest helpers; rarely in mixed-species flocks. Forages mostly on ground, occasionally up to mid-storey. Gleans arthropods primarily from leaf litter, usually under bushes and herbaceous growth; sometimes "blurs" into dense litter, but evidently does not use flaking or tossing manoeuvres. Occasionally glean items from dead leaves and branch surfaces in trees and bushes.

**Breeding.** In Venezuela season mostly Jul-Nov, eggs in Apr-Jul and nestlings in May-Sept, at least two broods per year; in S of range during austral spring-summer, eggs in Oct-Dec and Mar in Argentina; laying in Sept and Dec in E Brazil, often two broods. Presumably monogamous; territory and pair-bond maintained throughout year. Up to 5 (occasionally 8) young from previous broods may remain with parents, and help with building, maintenance and defence of subsequent nests. Nest enormous in relation to bird's size, a cylinder c. 0.5-2.5 m long, 25-100 cm wide, made of sticks, often thorny ones, some as long as 52 cm, tunnels 10-15 cm long, often bending, connect entrance holes (usually all on same side of nest) to two or more (as many as 8-9) separate chambers 10-15 cm in diameter, often with smaller antechambers, lined with bits of bark, leaves, hair, reptile skin and feathers, eggs placed in lowest chamber; suspended 2-23 m above ground from end of branch (which often droops or partially breaks under weight of nest), usually in isolated small tree or cluster of trees, new nest often placed near previous one; old nests regularly reused. Clutch 3-4 eggs; incubation by both sexes, period 16-17 days; both sexes feed chicks, one observation of a helper delivering food, nestling period 21-22 days. Nest often usurped by other bird species, especially Troupial (*Icterus icterus*).

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Common to fairly common in most parts of range. Occurs in numerous protected areas. Tolerates at least moderate anthropogenic habitat disturbance.

**Bibliography.** Alves & Cavalcanti (1996), Arvey (1964), Canevari *et al.* (1991), Capper, Clay *et al.* (2001), Carrara & Rodrigues (2001), Chebez *et al.* (1999), Coelho *et al.* (1997), Cory & Hellmayr (1925), Davis (1993), Fiora

(1933), Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), Friedmann (1927), Friedmann & Smith (1950), Guerrero & Arambiza (2001), Hayes (1995), Hilty (2003a), Hilty & Brown (1986), Lindell (1996), Mazar Barnett & Pearman (2001), Meyer de Schauensee (1959), Meyer de Schauensee & Phelps (1978), Morton (1979), Narosky *et al.* (1983), Naumburg (1930), Olrog (1963a), Pacheco *et al.* (1996a), Parker, Gentry *et al.* (1993), Parker, Parker & Plenge (1982), de la Peña (1987, 1988, 2001a), Phelps & Avelado (1987), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salvador (1990), Schubart *et al.* (1965), Short (1975), Sick (1993, 1997), Skutch (1969a, 1969b, 1985, 1996a), Smyth (1928), Stotz *et al.* (1996), Taczanowski (1884), Thomas (1979, 1982, 1983), Tubelis & Cavalcanti (2001), Vereá *et al.* (1999), Wetmore (1926), Zotta (1932).

## 154. Little Thornbird

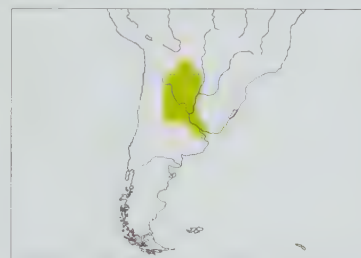
### *Phacellodomus sibilatrix*

**French:** Synallaxe siffleur **German:** Zwergbündelnister **Spanish:** Espinero Chico  
**Other common names:** Doering's Thornbird

**Taxonomy.** *Phacellodomus sibilatrix* P. L. Sclater, 1879, no locality = presumably Córdoba, Argentina.

Considered by some authors to form a superspecies with *P. rufifrons*, but the two overlap considerably in distribution, and differ in body size and nest structure. Monotypic.

**Distribution.** Extreme S Bolivia (SW Santa Cruz), W Paraguay, N Argentina (S to E La Rioja, N San Luis, C Córdoba and N Buenos Aires) and SW Uruguay.



**Descriptive notes.** 13-14 cm; 14-16 g. The smallest *Phacellodomus*. Has broad dull buff-whitish supercilium extending anteriorly to supraloral area, vague narrow dull brown postocular line; rest of face dull light brownish; forehead light rufous with paler shaft streaking, blending to dull brown crown and back; rump and uppertail-coverts faintly tinged rufescent; rufous lesser wing-coverts, dull brown median and great coverts, dark brown primary coverts, faintly rufescent-tinged remiges with darker tips; tail graduated, central two pairs of rectrices dull brown like back, next pair mainly rufous with distal third brownish, outer two pairs bright rufous; throat and belly dingy whitish, blending to slightly darker breast; flanks and undertail-coverts tinged tawny-brown; iris greenish-grey to dark brown (source of variation uncertain); upper mandible black to dark grey, lower mandible light grey-horn to grey; tarsus and toes grey to pinkish-grey. Differs from *P. rufifrons* mainly in smaller size, paler plumage. Sexes alike. Juvenile has slightly darker upperparts, slightly grayer underparts. Voice. Song variable, described as a series of shrill, well-spaced "cheep" notes, slightly descending, decelerating; also duet in which presumed male gives well-spaced "chet" notes, presumed female higher-pitched trilled rattle; lasts c. 6 seconds. Call a sharp "chip", often repeated.

**Habitat.** Tropical deciduous forest, Chaco woodland and scrub; from near sea-level to 2000 m.

**Food and Feeding.** Recorded dietary items are Coleoptera, spiders, Orthoptera, Formicidae. Observed in pairs or in small groups (possibly nest helpers), occasionally in mixed-species flocks. Gleans arthropods from ground or low vegetation, up to mid-storey.

**Breeding.** Season during austral spring-summer; eggs in Sept-Feb and nestlings in Oct in Argentina. Presumably monogamous. Nest a cone-shaped mass c. 25-40 cm tall, c. 40-45 cm wide at base, made of sticks, usually thorny ones, some up to 25 cm long, horizontal tunnel c. 35 cm long connects side entrance hole at lower end (entrance hole once at top of nest) to interior chamber 9-15 cm in diameter, often with smaller antechamber, lined with bits of plant cotton, leaves, hair, moss, lichens, snake skin, spider web and feathers, often additional, smaller chambers (rarely as many as three) often connected to each other but not to main nest-chamber; suspended 1-5 m above ground from end of drooping branch (weight of nest sometimes makes branch droop), usually in isolated small tree or cluster of trees, sometimes on top of older nest. Clutch 3 eggs, sometimes 4. Nest often usurped by other bird species.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Common to uncommon in much of its range. Occurs in Chancani Natural Reserve, in Argentina.

**Bibliography.** Anon. (2003d), Brooks (1997), Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Cuello (1985), Guerrero & Arambiza (2001), Hayes (1995), Kratter *et al.* (1993), Mason (1985), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Nores *et al.* (1983), Olrog (1963a), Pacheco *et al.* (1996a), Parker, Gentry *et al.* (1993), Pearman (1994d), de la Peña (1987, 1988, 1995), Remsen (2003a), Ridgely & Tudor (1994), Stotz *et al.* (1996), Wetmore (1926).

**155. Streak-fronted Thornbird**

### *Phacellodomus striaticeps*

**French:** Synallaxe à front rayé **German:** Strichelstirn-Bündelnister **Spanish:** Espinero Andino  
**Other common names:** Red-shouldered Thornbird

**Taxonomy.** *Anumbius striaticeps* d'Orbigny and Lafresnaye, 1838, Sicasica, La Paz, Bolivia.

Uncanny resemblance in plumage to *Asthenes dorbignyi* presumed due to convergence. Description of darker Peruvian race *griseipectus* (type locality in Cuzco) is matched by specimens from near city of La Paz, in Bolivia (not far from type locality of nominate); in addition, populations from Puno evidently differ from those in Apurimac and Cuzco. Further study, particularly examination of the types, is warranted. Two subspecies tentatively recognized.

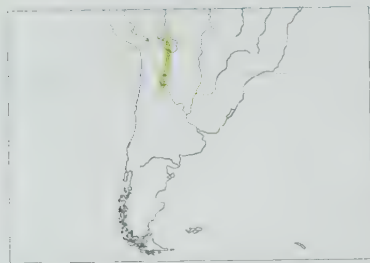
#### Subspecies and Distribution.

*P. s. griseipectus* Chapman, 1919 - dry Andean valleys of S Peru (Apurimac, Cuzco, Puno).  
*P. s. striaticeps* (d'Orbigny & Lafresnaye, 1838) - Andes of Bolivia (S from La Paz) and N Argentina (S to Catamarca and Tucumán).

**Descriptive notes.** 16-17 cm; 23-29 g. Nominate race has indistinct dull grey-buff supercilium, supraloral area tinged rufous, lores blackish mixed with grey-buff, indistinct dark brown postocular line; rest of face brownish with light rufous wash; forehead mixed blackish and reddish with brown

On following pages: 156. Freckle-breasted Thornbird (*Phacellodomus striatocollis*); 157. Chestnut-backed Thornbird (*Phacellodomus dorsalis*); 158. Greater Thornbird (*Phacellodomus ruber*); 159. Red-eyed Thornbird (*Phacellodomus erythrophthalmus*); 160. Canebrake Groundcreeper (*Clibanornis dendrocolaptoideus*); 161. Firewood-gatherer (*Anumbius annumbi*); 162. Lark-like Brushrunner (*Coryphistera alaudina*); 163. Spectacled Prickletail (*Siptornis striatocollis*); 164. Orange-fronted Plushcrown (*Metopothrix aurantiaca*).





shaft streaks, blending to paler and browner hindcrown without streaks; back and uppertail-coverts rich dark brown, rump slightly paler; wings mostly dark brown, median and lesser coverts rufescent, primary coverts fuscous brown, margins of remiges tinged rufescent basally and with dusky tips; tail graduated, central pair of rectrices dark brown, then increasing amounts of chestnut-rufous basally until outer pair all chestnut-rufous; throat and belly dull buff-white, light grey-brown extending from side of breast almost to centre, flanks and undertail-coverts light rufescent buff; iris dark brown to grey (source of variation uncertain); upper mandible dusky horn to dark grey, lower mandible pale horn to pale blue-grey, often with dusky tip; tarsus and toes greenish-grey to blue-grey. Differs from *P. rufifrons* in much heavier build, darker plumage; remarkably similar to syntopic races of *Asthenes dorbignyi*. Sexes alike. Juvenile undescribed. Race *griseipectus* described as darker above, with greyer breast, darker rufous flanks, no rufous wash on face. VOICE. Song a long accelerating and descending series of strained, complaining "cheet" notes interspersed with ticking "tsidit" notes, often given as duet. Call an irregular series of squeaky "jit" or "tsip" notes; also a loud trill.

**Habitat.** Arid montane scrub, often with columnar cacti or (locally) *Puya raimondii*, and *Polylepis* woodland; locally, ranges into agricultural fields and areas around houses. At 2800-5000 m; down to 1200 m in non-breeding season.

**Food and Feeding.** Reported dietary items include Lepidoptera larvae. Usually observed in pairs, from ground up to canopy. Gleans and probes for arthropods on branches, clumps of moss and epiphytic vegetation, and ground.

**Breeding.** Season during austral summer; eggs in Dec and fledgling in Mar in S Bolivia; eggs in Dec-Mar and nestlings in Feb in Argentina. Presumably monogamous. Nest a bulky cylindrical mass 60-150 cm high, 30-50 cm wide, of thorny branches, lateral entrance hole leads to interior chamber 8-11 cm in diameter, lined with deep layer of shredded plant material, hair and feathers; often conspicuously placed in bush or low tree, often overhanging ravine or cliff, occasionally on crossbar of telephone pole. Clutch 3-4 eggs, occasionally 5.

**Movements.** Mainly resident; some post-breeding downslope movements by S populations.

**Status and Conservation.** Not globally threatened. Uncommon to common, especially in S portion of range. Tolerates at least modest anthropogenic habitat disturbance, including fairly severe grazing; sometimes found near and around human habitations, suggesting reasonable adaptability. **Bibliography.** Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Dorst (1957), Fjeldsá & Krabbe (1990), Fjeldsá & Majer (1996), Fraga & Narosky (1985), Krabbe *et al.* (1996), Lönnberg (1903), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olrog (1963a), Parker *et al.* (1982), de la Peña (1987, 1988, 2001a), Remsen (2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ribero (1991), Ridgely & Tudor (1994), Schmitt *et al.* (1997), Smyth (1928), Stotz *et al.* (1996).

## 156. Freckle-breasted Thornbird

### *Phacellodomus striaticollis*

**French:** Synallaxe rousselé

**German:** Fleckenbrust-Bündelnister

**Spanish:** Espinero Pechimoteado

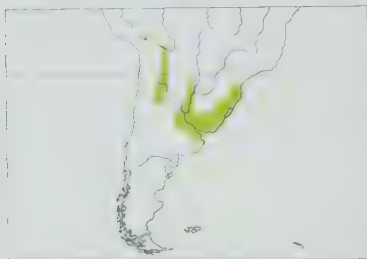
**Other common names:** Rufous-headed Thornbird; Spot-breasted Thornbird (*maculipectus*)

**Taxonomy.** *Anumbius striaticollis* d'Orbigny and Lafresnaye, 1838, Buenos Aires, Argentina. Distinctive race *maculipectus* often treated, with some justification, as a separate species, differing from nominate in plumage, iris colour, voice, habitat and nest shape. Isolated population in forest fragments in Catamarca and La Rioja (NW Argentina), differing in having dark chestnut forehead concolorous with rest of crown, and darker, more olivaceous back, represents an undescribed race. Two subspecies recognized.

#### Subspecies and Distribution.

*P. s. maculipectus* Cabanis, 1883 - Andes from C Bolivia (Cochabamba) S to NW Argentina (S to La Rioja).

*P. s. striaticollis* (d'Orbigny & Lafresnaye, 1838) - NE Argentina (E Formosa S to E Córdoba and N Buenos Aires), SE Brazil (S from E Paraná) and Uruguay.



shaft streaks and irregular, indistinct dark rufous "freckles", belly dull light brownish-white, flanks and undertail-coverts dull grey-brown; iris yellow to creamy buff or pale orange; upper mandible blackish to brownish, lower mandible grey, sometimes with dark tip; tarsus and toes grey to greenish-grey. Sexes alike. Juvenile has less rufescent back. Race *maculipectus* has grey eyes, more rufous (less brownish-chestnut) crown with whitish shaft streaks, more conspicuous supercilium, darker underparts, especially breast, with more conspicuous whitish speckles. VOICE. Song starts with one to several ascending low notes, sometimes hesitating, followed by 3-4 loud, shrill descending monotonic notes that end abruptly, "psep, psep, psep-kleek, kleek, kleek"; *maculipectus* song described as similar but stronger, faster, longer, lower-pitched, 10-25 less evenly spaced, complaining notes, "kew, kéé-keee-keee-keee-keee-keee...", lasts 2.5-3 seconds, or up to 10 seconds when given as duet. Alarm a series of squeaky ticking notes.

**Habitat.** Nominative race inhabits riparian thickets, gallery forest, arid lowland scrub, and marsh borders, almost always near water; near sea-level to 700 m. Race *maculipectus* in dry to semi-humid montane woodland (e.g. *Alnus acuminata*, *Podocarpus*) and scrub (e.g. *Baccharis. Miconia*); mostly 1000-2500 m, locally to 3100 m.

**Food and Feeding.** Recorded food items of nominate race are Coleoptera (of families Curculionidae, Elateridae, Chrysomelidae, Tenebrionidae), shield-bugs (Pentatomidae), squash-bugs (Coreidae), grasshoppers (Acrididae), and Diptera; Coleoptera and their larvae recorded for *maculipectus*.

shaft streaks, blending to paler and browner hindcrown without streaks; back and uppertail-coverts rich dark brown, rump slightly paler; wings mostly dark brown, median and lesser coverts rufescent, primary coverts fuscous brown, margins of remiges tinged rufescent basally and with dusky tips; tail graduated, central pair of rectrices dark brown, then increasing amounts of chestnut-rufous basally until outer pair all chestnut-rufous; throat and belly dull buff-white, light grey-brown extending from side of breast almost to centre, flanks and undertail-coverts light rufescent buff; iris dark brown to grey (source of variation uncertain); upper mandible dusky horn to dark grey, lower mandible pale horn to pale blue-grey, often with dusky tip; tarsus and toes greenish-grey to blue-grey. Differs from *P. rufifrons* in much heavier build, darker plumage; remarkably similar to syntopic races of *Asthenes dorbignyi*. Sexes alike. Juvenile undescribed. Race *griseipectus* described as darker above, with greyer breast, darker rufous flanks, no rufous wash on face. VOICE. Song a long accelerating and descending series of strained, complaining "cheet" notes interspersed with ticking "tsidit" notes, often given as duet. Call an irregular series of squeaky "jit" or "tsip" notes; also a loud trill.

**Habitat.** Arid montane scrub, often with columnar cacti or (locally) *Puya raimondii*, and *Polylepis* woodland; locally, ranges into agricultural fields and areas around houses. At 2800-5000 m; down to 1200 m in non-breeding season.

**Food and Feeding.** Reported dietary items include Lepidoptera larvae. Usually observed in pairs, from ground up to canopy. Gleans and probes for arthropods on branches, clumps of moss and epiphytic vegetation, and ground.

**Breeding.** Season during austral summer; eggs in Dec and fledgling in Mar in S Bolivia; eggs in Dec-Mar and nestlings in Feb in Argentina. Presumably monogamous. Nest a bulky cylindrical mass 60-150 cm high, 30-50 cm wide, of thorny branches, lateral entrance hole leads to interior chamber 8-11 cm in diameter, lined with deep layer of shredded plant material, hair and feathers; often conspicuously placed in bush or low tree, often overhanging ravine or cliff, occasionally on crossbar of telephone pole. Clutch 3-4 eggs, occasionally 5.

**Movements.** Mainly resident; some post-breeding downslope movements by S populations.

**Status and Conservation.** Not globally threatened. Uncommon to common, especially in S portion of range. Tolerates at least modest anthropogenic habitat disturbance, including fairly severe grazing; sometimes found near and around human habitations, suggesting reasonable adaptability. **Bibliography.** Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Dorst (1957), Fjeldsá & Krabbe (1990), Fjeldsá & Majer (1996), Fraga & Narosky (1985), Krabbe *et al.* (1996), Lönnberg (1903), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olrog (1963a), Parker *et al.* (1982), de la Peña (1987, 1988, 2001a), Remsen (2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ribero (1991), Ridgely & Tudor (1994), Schmitt *et al.* (1997), Smyth (1928), Stotz *et al.* (1996).

Usually in pairs, foraging from ground to understorey. Gleans arthropods from ground and from vegetation (including emergent marsh vegetation for nominate).

**Breeding.** Season during austral spring-summer; eggs in Aug-Jan and nestlings from Sept to early Feb in E (nominate); eggs in Oct-Nov in W (*maculipectus*). Monogamous. Nest (nominate race) an oblong, globular mass c. 30-50 cm long, 25-30 cm high, 12-20 cm wide, of sticks, usually thorny ones, side entrance on upper end leads through curving tunnel to antechamber, then to nest-chamber c. 10-12 cm in diameter, lined with soft plant material (such as inflorescences of *Typha*), sometimes the portion containing antechamber elaborated into second element, giving nest the form of two joined spheres, placed 1-3 m up, often above water or marsh vegetation, supported by branches in small tree; *maculipectus* a cylindrical or triangular mass (c. 30 × 30 × 20 cm) of twigs, often spiny, side or bottom entrance leading to two chambers, one above the other, nest itself in upper chamber, c. 10 cm in diameter, chamber and tunnel lined with fine grasses; suspended 3-4 m up from end of branch. Clutch 3-4 eggs, sometimes 2 or 5 (nominate), or 3 eggs (*maculipectus*, few data); incubation period c. 16 days; nestling period c. 12-13 days. Nests regularly parasitized by Shiny Cowbird (*Molothrus bonariensis*) and Striped Cuckoo (*Tapera naevia*).

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common. Present in several protected areas, e.g. Esteros del Iberá National Park, Ingeniero Otamendi Nature Reserve and Costanera Sur Ecological Reserve, in Argentina.

**Bibliography.** Belton (1984), Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Cuello (1985), Fjeldsá & Majer (1996), Krabbe *et al.* (1996), Mason (1985), Mazar Barnett & Pearman (2001), Mazar Barnett, Clark *et al.* (1998), Narosky *et al.* (1983), Nores & Cerana (1990), Nores & Yzurieta (1981), Nores *et al.* (1983), Olrog (1956, 1963a), de la Peña (1987, 1988, 1995), Pinto (1978), Remsen & Traylor (1989), Ridgely & Tudor (1994), Salvador (1988, 1992), Short (1975), Sick (1993, 1997), Stotz *et al.* (1996), Todd & Carriker (1922a), Wetmore (1926), Whitney *et al.* (1994), Willis (1992b), Zotta (1936).

## 157. Chestnut-backed Thornbird

### *Phacellodomus dorsalis*

**French:** Synallaxe à dos marron

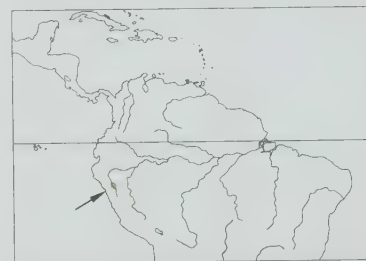
**German:** Graunacken-Bündelnister

**Spanish:** Espinero Dorsicastaño

**Taxonomy.** *Phacellodomus* [sic] *dorsalis* Salvin, 1895, Malca, 8000 feet [c. 2440 m], near Cajabamba, Cajamarca, Peru.

**Monotypic.**

**Distribution.** NW Peru (upper Marañón Valley in S Cajamarca and La Libertad); reports from Ancash require documentation.



chestnut with dull fuscous tips; tail graduated, central pair of rectrices mostly dull chestnut with browner inner webs, rest rufous-chestnut, some dull brown on tips; throat and malar area white; upper breast tawny brownish with whitish shaft spots, forming irregular breastband, rufous at breast side continuing to and broadening on flanks; lower breast and belly vaguely mottled whitish and brownish, some rufous flecking along flanks; undertail-coverts rufescent brownish, vaguely mottled; iris grey; upper mandible dark olive-horn to dark horn, lower mandible silver-grey to olive-grey; tarsus and toes grey to blue-grey. Juvenile undescribed. VOICE. A series of ticking "chit-chit-chit-chit-chit" notes given for long periods and varying in intensity, either alone or accelerating and breaking into a loud, even loudsong "chup-chup-chupchupchuppppp" accelerating at the end.

**Habitat.** Arid montane scrub, on brushy slopes with scattered short *Prosopis* trees; 1800-2800 m. **Food and Feeding.** Little known. Observed singly or in pairs, usually 1-4 m from ground; evidently gleans arthropods from branches and, possibly, from foliage.

**Breeding.** Season not documented. Presumably monogamous. Nest a large cylinder of twigs and branches, placed near tip of branch (perhaps mostly in *Prosopis*). No further information.

**Movements.** Resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Marañón Valley EBA. Uncommon; reported as fairly common around Hacienda Limón, in Cajamarca. Known from only 5-6 localities within its small range (less than 2000 km²). Population estimated at fewer than 10,000 individuals; declining as a result of destruction of habitat, much of which already lost to cultivation. Tolerates at least modest habitat degradation (overgrazing, cutting for firewood). Main threats to habitat appear to be cattle-ranching and the continued planting of oil palms (*Elaeis guineensis*).

**Bibliography.** Begazo *et al.* (2001), Cory & Hellmayr (1925), Dinerstein *et al.* (1995), Fjeldsá & Krabbe (1990), Parker *et al.* (1982), Remsen (2003a), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

## 158. Greater Thornbird

### *Phacellodomus ruber*

**French:** Synallaxe rouge

**German:** Rotbrauner Bündelnister

**Spanish:** Espinero Grande

**Other common names:** Yellow-eyed Thornbird

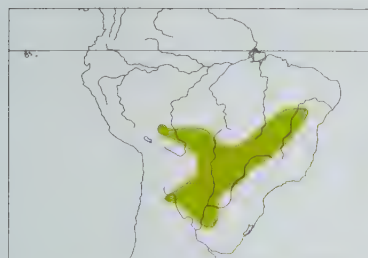
**Taxonomy.** *Furnarius ruber* Vieillot, 1817, Paraguay.

**Monotypic.**

**Distribution.** NC & E Bolivia (La Paz, Beni, E Santa Cruz), interior S Brazil (S Mato Grosso and Mato Grosso do Sul E to W Bahia, S to NW São Paulo and NW Paraná, also W Rio Grande do Sul), Paraguay and N Argentina (Salta and Formosa S to Tucumán, Santa Fe, Entre Ríos and Corrientes).

**Descriptive notes.** 19-21 cm; 35-51 g. Bulkier and redder thornbird. Has face mostly rufescent brown to greyish-brown, slightly paler in supercilium and supraloral areas; crown reddish-chest-





nut with faint pale shaft streaks, hindcrown and back rich reddish-brown to olive-brown (much individual variation), sometimes becoming more chestnut on lower back, rump lighter rufescent brown, uppertail-coverts chestnut; wings relatively uniform, rufous-chestnut; tail graduated, reddish-chestnut; throat and malar area whitish, blending to pale breast tinged with light brownish, darkening at side; belly whitish, flanks and undertail-coverts light rufescent brown; iris light yellow to orange-yellow to orange; upper mandible blackish to dark greyish-horn, lower mandible pale grey to greyish-green; tarsus and toes grey to olive.

Sexes alike. Juvenile lacks well-defined crown patch, has breast mottled brownish. VOICE. Song described as a long series of 15-20 "chip" notes that start explosively, then slowly accelerate and fade; duets. Call sharp "check check" and "chweet".

**Habitat.** Riparian thickets, gallery woodland and scrub, almost always near water; occasionally ventures into emergent marsh vegetation when foraging. Mostly 300-1100 m; locally to 1400 m in Bolivia.

**Food and Feeding.** Recorded food items include ants and Coleoptera. Usually seen in pairs, mostly in understorey; also, regularly terrestrial. Evidently gleans arthropods from dense vegetation and from ground.

**Breeding.** Season during austral spring-summer; eggs in Oct-Jan. Nest a cone-shaped mass c. 35-60 cm tall, 30-50 cm in diameter at base, made of twigs and branches, often thorny ones, some branches as long as 50-60 cm, side entrance at lower end leads to interior chamber (sometimes with antechamber) c. 10-12 cm in diameter, lined with fine grasses and feathers; suspended 1-4-3 m up from low vegetation, often over water, occasionally placed on top of old nest. Clutch 3-4 eggs, rarely 5.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to common throughout range. Occurs in a number of protected areas, including Pantanal National Park, in Brazil, and Esteros del Iberá and Calilegua National Parks, in Argentina.

**Bibliography.** Anon. (2003d), Belton (1984), Brooks *et al.* (1993), Canevari *et al.* (1991), Chebez *et al.* (1999), Contreras (1979d), Cory & Hellmayr (1925), Davis (1993), Friedmann (1927), Guerrero & Arambiza (2001), Hayes (1995), Ihering (1914), Marini, Motta-Júnior *et al.* (1997), Mazar Barnett & Pearman (2001), Naumburg (1930), Narosky *et al.* (1983), Navas & Bö (1988), Parker *et al.* (1991), de la Peña (1987, 1988, 1995), Perry *et al.* (1997), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Short (1975), Sick (1993, 1997), Smyth (1928), Stotz *et al.* (1996), Straube & Bornschein (1995), Wetmore (1926).

## 159. Red-eyed Thornbird

### *Phacellodomus erythrophthalmus*

**French:** Synallaxe aux yeux rouges

**Spanish:** Espinero Ojirrojo

**German:** Orangebrust-Bündelnister

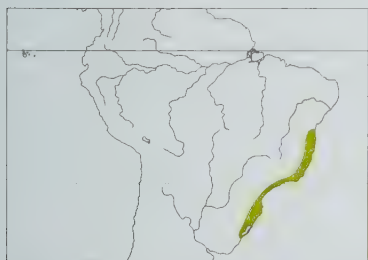
**Taxonomy.** *Anabates erythrophthalmus* Wied, 1821, Rio Catolé, Bahia, Brazil.

Formerly placed in a monotypic genus *Driocistis*. Distinctive: differs from congeners in terms of plumage and voice. Race *ferrugineigula* almost certainly a separate species; very recently reported as co-occurring with nominate in São Paulo. Two subspecies currently recognized.

**Subspecies and Distribution.**

*P. e. erythrophthalmus* (Wied, 1821) - SE Brazil, from S Bahia S to NE São Paulo.

*P. e. ferrugineigula* (Pelzeln, 1858) - S Minas Gerais and S Rio de Janeiro to S Rio Grande do Sul, in SE Brazil.



**Descriptive notes.** 16-18 cm; 24-25 g. Medium-sized thornbird with orange to red eyes and somewhat unusual plumage pattern. Nominant race has indistinct dull rufous-brown supercilium, darker brown lores and postocular line darker, rest of face rufescent brownish; forehead and forecrown bright rufous; rest of crown, back and rump rather dark brownish-olive, uppertail-coverts slightly tinged chestnut; wings mostly dull warm brown, brighter at bases of remiges and duller at tips; tail graduated, rufous; throat dark rufous, blending to olivaceous brown on underparts, palest in centre of belly; iris orange; upper mandible black,

lower mandible grey; tarsus and toes greenish-grey to grey. Sexes alike. Juvenile undescribed. Race *ferrugineigula* has red iris, rufous on crown more extensive, tail brown with rufous outer rectrices, orange-rufous of throat extending to breast, whitish belly, warmer and browner flanks and undertail-coverts. VOICE. Song (nominate race) described as a series of introductory notes on same pitch followed by descending series of loud notes, "chree, chree, chree-tséeéh-tséeéh-tséeéh", sometimes as duet; *ferrugineigula* song as series of loud ringing notes introduced by 1-2 softer notes, "ku, keeé-keeé-keeé-keeé-keeé-kuh".

**Habitat.** Montane evergreen forest, tropical lowland evergreen forest, and secondary forest; in S of range (*ferrugineigula*) freshwater marshes, riparian thickets, gallery forest, swampy woodland, dense second growth. From near sea-level to 800 m.

**Food and Feeding.** Little known. Seen singly or in pairs; evidently gleans arthropods from foliage and branches in dense undergrowth.

**Breeding.** Season probably during austral spring-summer. Presumably monogamous. Nest a large boot-shaped mass c. 40 cm long and 30 cm wide, of usually thorny sticks, inner chamber lined with grasses, usually (perhaps always) with smaller antechamber, suspended from branch tip. Clutch possibly 3 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Atlantic Forest Lowlands EBA. Uncommon. Occurs in several protected areas, e.g. Serra dos Órgãos National Park. This species' restriction to narrow band of lowlands of SE Brazil could render it vulnerable in the future.

**Bibliography.** Belton (1984), Cordeiro (2001), Cory & Hellmayr (1925), Ferreira de Vasconcelos & Melo-Júnior (2001), Goerck (1999a), Ihering (1900), Parrini *et al.* (1998), Pinto (1978), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993, 1997), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

## Genus *CLIBANORNIS*

P. L. Sclater & Salvin, 1873

## 160. Canebrake Groundcreeper

### *Clibanornis dendrocolaptoideus*

**French:** Synallaxe des bambous

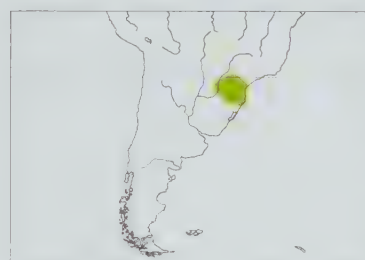
**German:** Halsflecken-Bündelnister

**Spanish:** Espinero Tacuatí

**Taxonomy.** *Anabates dendrocolaptoideus* Pelzeln, 1859, River Yapó, Curytiba, and Boqueirão, Paraná, Brazil.

No obvious close relatives; formerly thought to be close to *Cinclodes*. Sometimes placed in genus *Phacellodomus*, but vocal and plumage differences support treatment in monotypic genus.

**Distribution.** SE Brazil (S São Paulo S to N Rio Grande do Sul), E Paraguay (records from Caazapá, Alto Paraná, and possibly S Caaguazú) and NE Argentina (Misiones).



**Descriptive notes.** 21-22 cm; 52-54 g. Relatively large furnariid. Narrow greyish or buff-grey supercilium broadens and becomes more conspicuous posteriorly; lores dark brown, rest of face dark dull reddish-brown; crown dark chestnut-brown, back and rump rufescent brown, uppertail-coverts rufous-brown; wing-coverts and remiges rufescent brown; tail with rectrices slightly stiffened basally, slightly blunt at tips, central pair dull rufous-brown, rest rufous-chestnut; throat white, blackish markings at side; breast and belly dull greyish, sides rufous-brown, flanks and undertail-coverts ochraceous brown; iris brown; bill

black; tarsus and toes olive-green to greenish-grey. Sexes alike. Juvenile lacks dark feather tips at side of throat, throat washed buff, breast faintly mottled buff, belly greyer. VOICE. Song described as series of loud staccato notes that starts with squeaky, dry "chk" notes, changes half-way through to higher-pitched, faster, squeakier notes; also as "chet, chet, chet-chit-chit", sometimes ending in higher and sharper note.

**Habitat.** Montane evergreen forest and tropical lowland evergreen forest, mostly in hilly terrain at forest edge or in tall second growth; in Brazil, bamboo thickets and dense vegetation in ravines near streams. Habitat preferences in Paraguay and Argentina not understood. From near sea-level to 1200 m.

**Food and Feeding.** Largely undescribed. Usually observed in pairs, in dense undergrowth; presumably gleans arthropods on or near ground.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Atlantic Forest Lowlands EBA. Considered mostly rare within its small range. Population estimated at 2500-10,000 individuals at end of 20th century; declining owing to habitat destruction. Although difficulty in detection may lead to underestimation of numbers, it may be naturally rare because of restriction to some specific micro-habitat. In Brazil, present in Iguaçu National Park and in Serra da Graciosa Environmental Protection Area; fairly common near Curitiba, in Paraná, and near Urubici, in Santa Catarina; not recorded in Rio Grande do Sul since 1973. In Argentina, present in Iguaçu National Park, Uruguá-i and La Araucaria Provincial Parks, and San Antonio Strict Nature Reserve. In Paraguay, recorded in Caaguazú National Park and reported from La Golondrina Private Nature Reserve, but all records from that country are either old or single observations; intensive surveys using playback have failed to find any resident population; not recorded in Alto Paraná since before 1914. General destruction and degradation of forest habitat pose major threats.

**Bibliography.** dos Anjos & Boçon (1999), Belton (1984), Brooks, Barnes *et al.* (1993), Brooks, Clay *et al.* (1995), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Collar & Andrew (1988), Cordeiro (2001), Cory & Hellmayr (1925), Hayes (1995), Lowen, Bartrina, Brooks *et al.* (1996), Lowen, Bartrina, Clay & Tobias (1996), Lowen, Clay *et al.* (1997), Mazar Barnett & Pearman (2001), Naka *et al.* (2000), Narosky *et al.* (1983), Pearman (1994g), de la Peña (1988), Pinto (1978), Ridgely & Tudor (1994), do Rosário (1996), Sick (1993, 1997), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Whitney (2003c).

## Genus *ANUMBIUS* d'Orbigny & Lafresnaye, 1838

## 161. Firewood-gatherer

### *Anumbius annumbi*

**French:** Annumbi fagoteur

**German:** Weißkehl-Bündelnister

**Spanish:** Leñatero

**Other common names:** Wood-gatherer

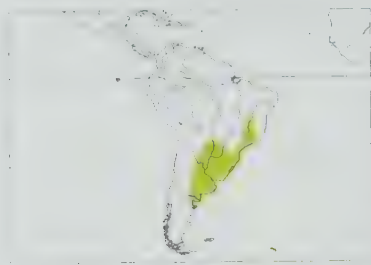
**Taxonomy.** *Furnarius annumbi* Vieillot, 1817, Paraguay.

No obvious close relatives. Proposed race *machrisi*, described from Goiás (Brazil), has been shown not to be diagnosable. Monotypic.

**Distribution.** SE Brazil (Goiás and Minas Gerais S to Rio Grande do Sul), C & E Paraguay, N & E Argentina (Chaco and Misiones S to NE Chubut) and Uruguay.

**Descriptive notes.** 18-20 cm; 27-45 g. Unusual furnariid with striped back and long, "spiny" tail. Has conspicuous broad whitish supercilium; postocular stripe medium brownish, rest of face light brownish to greyish-brown; forehead dull rufous, blending to dull brown or sandy brown crown with narrow blackish streaks, these fading on hindneck and upper back, then coalescing into broader longer streaks on rest of dull brown back; rump dull pale brown, long uppertail-coverts dark brownish with lighter brownish margins; wings mostly dull brown, some darker centres on coverts and darker tips of remiges; tail graduated, central rectrices slightly stiffened basally and with webs attenuated to a point at tip, others not so pointed, central pair dark brownish, remainder blackish-brown with





Song, often given as duet, described as a fast, rough, bubbly, accelerating, descending series of trilled notes ending with lower-pitched rattle, "chit, chit, chit, che-che-che-ee-ee-ee-ee"; call a sharp "tschick".

**Habitat.** Low, seasonally wet grassland, pastures/agricultural land, second-growth scrub; acacia savanna, grassland, pastureland, and edge of open woodland, including hedgerows and groves around farmhouses; from near sea-level to 1000 m.

**Food and Feeding.** Recorded dietary items are Coleoptera (*Aphodius* and *Curculionidae*), Hemiptera, Diptera larvae, and seeds. Usually in pairs, and often in small groups (possibly nest helpers). Gleans items from ground and up to low vegetation; perhaps mostly terrestrial.

**Breeding.** Season during austral spring-summer; eggs in Sept-Feb and nestlings in Sept-Jan in Argentina; double-brooded. Presumably monogamous. Nest a cylindrical mass c. 50-110 cm high and 30-40 cm wide (occasionally nearly twice those dimensions), of carefully interwoven, usually thorny twigs, main axis vertical or slanted, entrance hole at or near top, interior tunnel to chamber starts straight but then curves, tunnel or entrance hole sometimes lined with bits of glass, feathers and threads, nest-chamber 14-20 cm across, near bottom, lined with plant fibres, feathers, twigs and sometimes inflorescences; usually placed 1-4 m (rarely, to 24 m) above ground among branches, conspicuously in isolated tree or bush, usually thorny, or on crossbar of telephone pole or other man-made object, and often adjacent to old nests from previous years; nest possibly sometimes reused in subsequent years. Clutch 3-5 eggs, possibly sometimes 6; incubation period c. 16 days; nestling period c. 17-18 days; young may accompany parents during second nesting, occasionally help with nest-building, but generally expelled from natal territory within 1 month of fledging.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally common. Occurs in a number of protected areas, including Itatiaia, Aparados da Serra and Serra da Canastra National Parks, in Brazil, and Esteros del Iberá National Park, in Argentina. Tolerates at least moderate grazing and other anthropogenic disturbance; presumably benefits to a degree from deforestation.

**Bibliography.** Anon. (2003d), dos Anjos & Boçon (1999), dos Anjos *et al.* (1997), Aravena (1928), Belton (1984), Brooks (1997), Canevari *et al.* (1991), Chebez *et al.* (1999), Contreras (1979d), Cory & Hellmayr (1925), Cuervo (1985), Fraga (1979), Friedmann (1927), Hayes (1995), Mason (1985), Mazar Barnett & Pearman (2001), Melo-Júnior *et al.* (2001), Narosky *et al.* (1983), Nores, A.I. (1995), Nores, A.I. & Nores (1999), Nores, M. *et al.* (1983), Ochoa (1971), Olrog (1963a), Parker & Goerck (1997), de la Peña (1987, 1988, 1996), Pinto (1978), Remsen (2003a), Renard (1918), Ridgely & Tudor (1994), Serié & Smyth (1923), Short (1975), Sick (1993, 1997), Silveira (1998), Smyth (1928), Stotz *et al.* (1996), Straube (1994), Wetmore (1926), Willis (1992b), Wilson (1926), Zotta (1936).

## Genus *CORYPHISTERA* Burmeister, 1860

### 162. Lark-like Brushrunner

*Coryphistera alaudina*

French: Annumbi alouette German: Chaco-Buschläufer Spanish: Espinero Crestudo

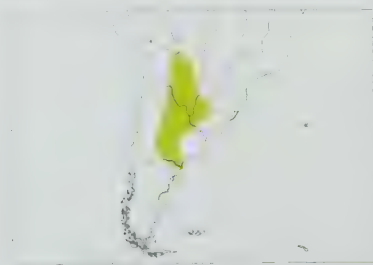
**Taxonomy.** *Coryphistera alaudina* Burmeister, 1860, no locality = near Paraná, Brazil.

No obvious close relatives. Validity of race *campicola* questioned by some authors; may represent only clinal extreme in variation, and this suggested by mensural data, but quantitative analysis of plumage characters required. Two subspecies tentatively recognized.

**Subspecies and Distribution.**

*C. a. campicola* Todd, 1915 - SE Bolivia (Chuquisaca, S Santa Cruz) and W Paraguay.

*C. a. alaudina* Burmeister, 1860 - S Bolivia (Tarija), N & E Argentina (Salta and Chaco S to Mendoza, La Pampa and S Buenos Aires), NW Uruguay and extreme SE Brazil (W Rio Grande do Sul).



**Descriptive notes.** 15-17 cm; 27-42 g. Crested, terrestrial furnariid with unusual facial pattern, general appearance very like that of a lark (*Alaudidae*). Has whitish area extending from eye to supraloral area, somewhat crescent-shaped whitish area below eye and including anterior portion of auriculars, dull brownish lores and area behind eye, posterior part of auriculars cinnamon-rufous with narrow connection to lores (thus outlining white area below eye); forehead rufescent brownish, blending to very dark brown crown with feathers elongated into prominent crest; hind-crown and upper back pale dull brown with

vague darker streaking, streaks becoming broader and much darker on rest of back, rump and uppertail-coverts; wing-coverts dark fuscous brown, primary coverts blackish, remiges blackish with strongly contrasting rufescent inner margins (wider at bases), pale buff outer margins; tail slightly rounded to almost square, central rectrices dark fuscous brown with dull buff margins, remainder mostly rufous with progressively decreasing amounts dark fuscous brown edging distally; chin whitish; throat whitish, dull rufous streaking increasing in density posteriorly; breast whitish with broad, somewhat blurred dull rufous streaks, these fading and becoming browner on upper belly, flanks and undertail-coverts, almost unstreaked centre of belly; iris dark brown to light grey-

ish-brown; upper mandible brownish to yellowish-brown, usually darker tip, lower mandible pinkish-grey to yellow-brown, sometimes darker at tip; tarsus and toes dull orange to greyish-tan to light brown (source of variation uncertain). Sexes alike. Juvenile has shorter crest, less distinct streaks. Race *campicola* has paler streaks on underparts, some pale rufous edging at bases of crest feathers, more buff edging on back and rump feathers. Voice. Primary vocalization described as a high-pitched, tremulous, tinkling trill, "rrrrrew" or "croee, crriiii"; calls include variety of low buzzy trills and squeaky notes.

**Habitat.** Arid lowland scrub; arid Chaco and *monte* woodland; ranges into adjacent agricultural fields. From near sea-level to 500 m.

**Food and Feeding.** Recorded food items are Coleoptera (especially *Curculionidae*; also *Elateridae*), Orthoptera, Hemiptera, spiders, and snail shells; some stomachs contained almost entirely ants (*Formicidae*). Occurs in groups of 3-7 in breeding season; flocks of 12-15 during non-breeding season, when also in mixed-species flocks. Largely terrestrial. Gleans arthropods from ground, usually near cover; walks, and scratches ground, sometimes using both feet; occasionally flakes or tosses dung, or turns it over with feet.

**Breeding.** Season during austral spring-summer; eggs from late Sept to Jan and nestlings in Oct in Argentina. Perhaps monogamous; "extra" birds in breeding-season social group, unless helpers, could suggest non-monogamous system; as many as 8 individuals seen to enter a single nest, at least one suspected case of more than one female laying in same nest. Nest a globular mass c. 30-100 cm in diameter, slightly elongated vertically, of tightly interwoven, thorny twigs and branches, some as long as 100 cm, interior tunnel 11-18 cm long, often winding, tunnel often lined with objects such as old butterfly chrysalids, desiccated frog skeletons, and bits of coloured glass, leads from top of nest to internal chamber, latter with floor of grasses and feathers; placed c. 2-5 m up on low branch in tree, occasionally on top of old nest. Clutch 3-4 eggs, possibly sometimes 5.

**Movements.** Mainly resident; some local movement to N in austral winter.

**Status and Conservation.** Not globally threatened. Fairly common to abundant in much of its range. Occurs in several protected areas, e.g. Chancani Natural Reserve, in Argentina.

**Bibliography.** Belton (1984), Canevari *et al.* (1991), Capurro & Bucher (1986), Chebez *et al.* (1999), Contreras (1980c), Cory & Hellmayr (1925), Cuervo (1985), Esteban (1951b), Fraga (1979), Friedmann (1927), Guerrero & Arambiza (2001), Hayes (1995), Kratter *et al.* (1993), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Nores *et al.* (1983), Ochoa (1971), Olrog (1963a), Partridge (1953), de la Peña (1987, 1988, 1995), Pinto (1978), Remsen (2003a), Remsen & T aylor (1989), Ridgely & Tudor (1994), Short (1975), Sick (1993, 1997), Smyth (1928), Stotz *et al.* (1996), Wetmore (1926).

## Genus *SIPTORNIS* Reichenbach, 1853

### 163. Spectacled Prickletail

*Siptornis striaticollis*

French: Pseudosittine à collier German: Brillenschlüpfer Spanish: Curutié Frontino  
Other common names: Stripe-necked Spinetail

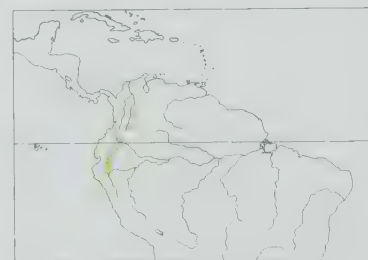
**Taxonomy.** *Synnalaxis* [sic] *striaticollis* Lafresnaye, 1843, Colombia = Bogotá.

No obvious close relatives. Two subspecies recognized.

**Subspecies and Distribution.**

*S. s. striaticollis* (Lafresnaye, 1843) - E Andes of Colombia (W slope in Cundinamarca and head of Magdalena Valley in Huila, and E slope in E Cauca and W Caquetá).

*S. s. nortoni* Graves & Robbins, 1987 - Andes of Ecuador (E slope) S to extreme N Peru (N Cajamarca).



**Descriptive notes.** 11-12 cm; 12-13 g. A tiny furnariid with plumage pattern somewhat like *Xenops*. Nominant race has short supercilium and partial eyering whitish, lores dull fuscous, auriculars rufescent with tawny shaft streaks; crown dark reddish-brown with hint of pale shaft streaking, accentuated on hindcrown; upperparts rich rufescent brown, becoming redder posteriorly, uppertail-coverts tinged chestnut; wing-coverts dark chestnut, primary coverts blackish-brown, bend of wing pale cinnamon, rufescent edges of inner remiges, mainly dark fuscous outer remiges; tail slightly graduated, central rectrices slightly stiffened

basally, shafts virtually devoid of barbs for distal 2 mm, giving "spiny" appearance, reddish-chestnut; chin buff, grizzled; malar area brown with pale buff streaks; throat and upper breast greyish olive-brown with fine pale buff streaks, narrow area on side of breast pale cinnamon, rest of underparts greyish olive-brown; iris brown; upper mandible dark brown, lower mandible pinkish with greyish tip; tarsus and toes greyish-green to olive-yellow. Sexes alike. Juvenile has crown rufescent brown, like back, broader and more extensive streaks on underparts. Race *nortoni* has much more conspicuous buff-whitish streaking on throat and breast, less white in face, paler lores. Voice. High-pitched trill, possibly as song.

**Habitat.** Montane evergreen forest; 1300-2400 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs, usually in mixed-species flocks, in mid-storey, occasionally to subcanopy. Climbs and hitches along small branches, sometimes hanging upside-down acrobatically. Gleans and probes in moss, bark crevices, dead leaves, epiphytes, and undersides of large green leaves (*Cecropia*); occasionally pecks at branches, using tail as brace.

**Breeding.** Season not documented. Presumably monogamous. Nest a spherical mass of moss and other plant material, with bottom entrance, placed at or near tip of lateral branch. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare to uncommon. Seems to be rather local in distribution.

**Bibliography.** Cory & Hellmayr (1925), Eley *et al.* (1979), Fjeldså & Krabbe (1990), Graves & Robbins (1987), Hilty & Brown (1986), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Rahbek *et al.* (1995), Remsen (2003a), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Salaman, Donegan & Cuervo (1999), Salaman, Stiles *et al.* (2002), Stotz *et al.* (1996).



Genus *METOPOTHRIX*

P. L. Sclater & Salvin, 1866

164. Orange-fronted Plushcrown

*Metopothrix aurantiaca*

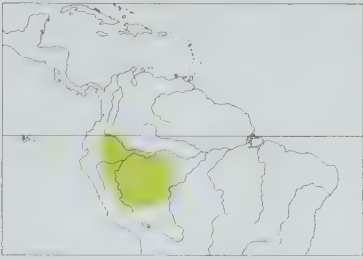
**French:** Tête-de-feu pelucheux    **German:** Orangestirn-Bündelnister    **Spanish:** Coronafelpa  
**Other common names:** Orange-fronted Softtail

**Taxonomy.** *Metopothrix aurantiacus* Sclater and Salvin, 1866, Sarayacu, Rio Ucayali, Loreto, Peru.

Highly distinctive plumage so different from that of others in family that its placement in Furnariidae was once questioned. Possible link to *Acrobatornis* suggested by nest architecture and voice. Monotypic.

**Distribution.** SE Colombia (Putumayo, Amazonas), E Ecuador, E Peru, W Brazil (E to lower R Juruá and upper R Purús, S to Acre), and NE Bolivia (NE Beni).

**Descriptive notes.** 11 cm; 10-12 g. Diminutive furnariid, the only one with yellow and greenish plumage and yellow-orange legs. Has greenish-yellow supercilium behind eye, becoming yellow above eye, merging with yellow forehead, lores and indistinct eyering; faint narrow eyeline dark greenish-olive, auriculars dull greenish-olive; forehead bright yellow, blending to narrow band of orange, then to greenish-olive crown and upperparts, rump faintly paler; wings mostly dark olive fuscous, coverts and remiges with pale dull yellow-green margins, primary coverts dark fuscous; tail graduated, rectrices slightly stiffened basally, slightly pointed, dull greenish-olive; throat yellow, blending to dull yellowish-green breast, flanks and undertail-coverts, slightly paler on belly; iris brown to dark brown to



grey; upper mandible black, lower mandible black to grey; tarsus and toes bright yellow-orange to yellow. Sexes alike. Juvenile (or possibly immature) has reduced orange and yellow on face. **Voice.** Song a slightly descending series of 3-5 evenly spaced, high, thin notes, lasts 1.5-2.5 seconds; call described as thin "tsweet-tsweet", often repeated.

**Habitat.** River-edge forest, old and middle-aged river islands, tall second growth, and edges of clearings in *várzea* and *terra firme* forest, rarely far from rivers; 150-650 m.

**Food and Feeding.** Mainly arthropods; recorded once as feeding on fruit, and once observed to

feed at flowers (not known if for nectar or for insects). Occurs in pairs or in presumed family groups of 3-5 individuals, often in mixed-species flocks. Forages from mid-storey to canopy. Gleans arthropods from leaves (especially undersides) and twigs, frequently hanging acrobatically directly from leaf.

**Breeding.** Nest-building observed in Jan in Ecuador. Nest c. 50 cm in diameter, a mass of sticks, some c. 25 cm long, with side entrance, placed 4-20 m above ground. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Generally uncommon but locally common. Occurs in several protected areas, including Cuyabeno Reserve, in Ecuador, and Manu National Park and Biosphere Reserve, in Peru. May benefit from limited deforestation, resulting in increasing its preferred edge habitats.

**Bibliography.** Berlepsch (1903), Cory & Hellmayr (1925), Feduccia (1970b), Fraga (1992), Gyldenstolpe (1951), Hilty & Brown (1986), Pacheco (1995), Pacheco *et al.* (1996a), Parker *et al.* (1982), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rosenberg, G.H. (1990), Schulenberg *et al.* (2001), Sick (1993, 1997), Stotz *et al.* (1996), Terborgh *et al.* (1984), Traylor (1958, 1972), Vaurie (1971b), Whitney (2003c), Whitney *et al.* (1996).





168



165



166



167



169

ssp  
*brunnescens*



ssp *coloratus*



pale-throated  
bird



170



171



ssp *rubiginosus*

172



173



ssp  
*squamiger*

175



ssp *perlatus*

176



ssp *boultoni*

174



ssp  
*peruvianus*



177



ssp *gutturalis*

179

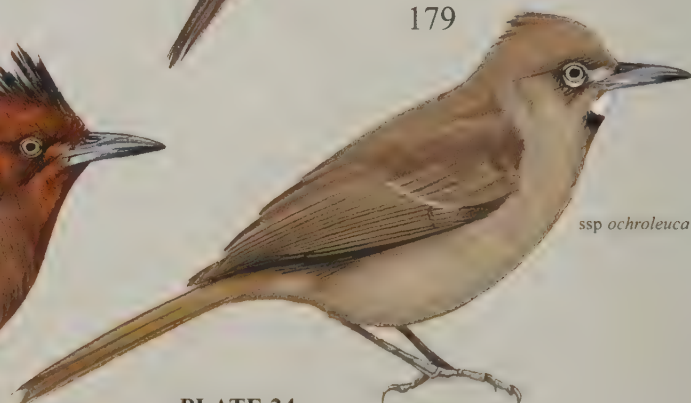


ssp *lophotes*

178



ssp *argentina*



ssp *ochroleuca*

PLATE 24

inches 3  
cm 8



## Genus *XENERPESTES* Berlepsch, 1886

### 165. Double-banded Greytail

#### *Xenerpestes minlosi*

**French:** Queue-grise des feuilles **German:** Flügelbindenschlüpfer **Spanish:** Colagris Norteño  
**Other common names:** Double-banded Softtail

**Taxonomy.** *Xenerpestes minlosi* Berlepsch, 1886, near Bucaramanga, Santander, Colombia. Relationships of genus unclear; plumage, nest architecture and placement, and voice suggest possible relationship to *Acrobatornis*. Sometimes treated as forming a superspecies with *X. singularis*, the two differing in elevational distribution. Two subspecies recognized.

#### **Subspecies and Distribution.**

*X. m. umbraticus* Wetmore, 1951 - E Panama (Darién), W Colombia (Caribbean lowlands E to R Sinu, and Pacific lowlands) and NW Ecuador (Esmeraldas, NW Pichincha).

*X. m. minlosi* Berlepsch, 1886 - Caribbean lowlands of Colombia E to middle Magdalena Valley (NW Santander, W Boyacá).



**Descriptive notes.** 11-12 cm. Tiny, warbler-like furnariid. Has creamy white supercilium, olive-buff lores, dark grey line behind eye, greyish rest of face; crown blackish, blending to grey back, rump and uppertail-coverts; wing-coverts dark grey with two conspicuous white wingbars, bend of wing yellowish, remiges dark fuscous; tail slightly rounded, dark grey; throat and underparts creamy whitish, some greyish flecking on breast, olive-buff undertail-coverts; iris light brown; upper mandible dark brown, lower mandible greyish-white; tarsus and toes greyish-brown. Sexes alike. Juvenile has greyer underparts, less distinct supercilium, lacks wingbars. Race *umbraticus* has darker upperparts, lacking definite streaks on crown, darker wings and tail. **Voice.** Song a long, dry, extremely rapid chattering trill on same pitch, increasing in volume, lasts 3-12 seconds; call a sharp, thin, inflected note.

**Habitat.** Hilly tropical evergreen forest, also tall second growth; recorded from near sea-level to 900 m.

**Food and Feeding.** Arthropods. Usually in pairs or small groups, sometimes in mixed-species flocks. Forages from mid-storey to canopy, especially in dense vine tangles. Gleans items acrobatically, often from undersides of leaves, twigs and dead leaves, sometimes flowers; sometimes creeps briefly, like a *Xenops*.

**Breeding.** No information. A large stick nest with side entrance, found in E Panama, may have been of this species.

#### **Movements.** Resident.

**Status and Conservation.** Not globally threatened. Status not well known; considered rare to locally uncommon, but this may be in part a reflection of the difficulty in detecting this species. Recently listed as vulnerable in Ecuador. No data on population size, trends or specific threats; deforestation probably the main threat.

**Bibliography.** Anon. (2003g), Berlepsch (1903), Cory & Hellmayr (1925), Delgado (1985), Hilty & Brown (1986), Pacheco *et al.* (1996a), Parker & Parker (1980), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Robbins *et al.* (1985), Stotz *et al.* (1996), Vaurie (1971b), Wetmore (1951, 1972), Whitney *et al.* (1996).

### 166. Equatorial Greytail

#### *Xenerpestes singularis*

**French:** Queue-grise d'Équateur **German:** Roststimschlüpfer **Spanish:** Colagris Sureño  
**Other common names:** Equatorial Softtail

**Taxonomy.** *Synallaxis singularis* Taczanowski and Berlepsch, 1885, Mapoto, 7000 feet [c. 2130 m], Ambato, Tungurahua, Ecuador.

Relationships of genus unclear; plumage, nest architecture and placement, and voice suggest possible relationship to *Acrobatornis*. Sometimes treated as forming a superspecies with *X. minlosi*, the two differing in elevational distribution. Monotypic.

**Distribution.** Andes of Ecuador (E slope S from W Napo) S to N Peru (Cajamarca, San Martín).



**Descriptive notes.** 11-12 cm; 11-15 g. Tiny, warbler-like furnariid. Has yellowish-white supercilium narrowing and disappearing in front of eye, lores grizzled buff and greyish, broad olive-grey postocular band; forehead dull rufous with sharply defined blackish streaking, fading to olive-grey crown with vague blackish streaking; back olive-grey, rump slightly paler; wings mostly dark fuscous grey, blackish primary coverts; tail graduated, rectrices perhaps slightly stiffened, nearly rounded, colour as rump; malar area, throat and upper breast whitish with faint grey flecking, intensifying into narrow streaks laterally; lower

breast whitish with broader, more distinct dark grey streaks, these becoming longer on upper belly; lower belly and undertail-coverts more solidly greyish with vague paler streaks; iris chestnut to light brown to pale grey-brown (source of variation uncertain); upper mandible black to horn, lower mandible pale grey to pinkish; tarsus and toes olive-green to yellowish-green. Sexes alike. Juvenile undescribed. **Voice.** Song a dry trill, almost insect-like, c. 5 seconds long; call a dry "tsit".

**Habitat.** Montane evergreen forest, usually tall and epiphyte-laden; 1030-1700 m, occasionally to possibly 2140 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs, usually in mixed-species flocks, in canopy. Gleans food items from leaves and their bases, and from small branches, often by hanging upside-down and with other acrobatic manoeuvres; occasionally hitches along a branch.

**Breeding.** No published information. Nest-building reported in Jan in Ecuador. One hitherto unpublished record of a nest in Peru, a large structure c. 15 × 15 × 25 cm, somewhat like inverted light bulb in shape, made of sticks c. 15 cm in length or longer and c. 0.5 cm in diameter, suspended c. 10 m above ground from branch in isolated tree in roadside light-gap, active, at least 2 birds entering and leaving nest; reported nest under construction (almost completed) in Ecuador, roughly cylindrical, c. 10 × 10 × 20 cm, entrance on end, of sticks similar in size to above-mentioned, placed c. 10 m in hanging branch, both birds present, one seemed to be doing most of work.

#### **Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Ecuador-Peru East Andes EBA. Rare to locally uncommon; as a canopy species, however, it is difficult to detect and perhaps often overlooked. Occurs in Podocarpus National Park, in Ecuador. Lower montane forest throughout Andes is especially prone to clearance, and this and other species restricted to this elevational zone have suffered tremendous habitat loss.

**Bibliography.** Anon. (2003g), Berlepsch (1903), Cory & Hellmayr (1925), Pacheco *et al.* (1996a), Parker & Parker (1980), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rogers & Walker (2003), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Vaurie (1971b).

## Genus *ACROBATORNIS* Pacheco *et al.*, 1996

### 167. Pink-legged Graveteiro

#### *Acrobatornis fonscae*

**French:** Synallaxe à pattes roses **German:** Plantagenschlüpfer **Spanish:** Graveteiro

**Taxonomy.** *Acrobatornis fonscae* Pacheco *et al.*, 1996, Serra das Lontras, c. 550 m, above Itatingui, 15°11' S, 39°23' W. Municipality of Arataca, Bahia, Brazil.

No obvious close relatives. Plumage, nest architecture and placement, and voice suggest relationship to *Xenerpestes*; morphology, nest architecture and voice also suggest possible link to *Metopothrix* or *Margarornis*; song and nest structure suggest possible link to some *Asthenes* or *Cranioleuca*. The only furnariid with juvenile plumage radically different from adult. Monotypic.

**Distribution.** SE Bahia, in E Brazil.



**Descriptive notes.** 13-14 cm; 14-15 g. Distinctive furnariid, the only one with plumage entirely grey and black and legs bright pink. Has broad grey supercilium becoming very narrow in front of eye, merging with grizzled black and grey loreal region and forehead; rest of face slightly darker grey; forehead black with grey spotting, blending to black crown; back grey with black feather margins, producing weakly scalloped appearance, lower back and uppertail-coverts paler grey; wing a complex pattern of black and grey; tail strongly graduated, rectrices slightly stiffened basally, vanes greatly reduced towards tip, outer webs of central rectrices very

narrow (producing spiny and forked appearance), grey, becoming black distally; throat and breast grey with indistinct paler streaks, these becoming more conspicuous on belly, lower belly slightly tinged olive, flanks and undertail-coverts grey; iris pale grey; upper mandible dark brown to dusky horn, lower mandible pinkish; tarsus and toes bright pink. Sexes alike. Juvenile has pattern of adult, but grey largely replaced by reddish-yellow. **Voice.** Song 4-8 seconds long, 2-4 irregularly spaced sharp notes followed by series of piercing notes, accelerating and fading into trill, similar in quality to songs of *Asthenes dorbignyi* and *A. baeri*; song in response to playback longer, up to 12 seconds, often stuttering notes included, terminal trill faster, in duet, presumed male gives normal song, female interjects sharper notes similar to those that introduce song. Call a short, sharp note; occasional chattering series of 10-12 notes during greeting between partners.

**Habitat.** Found only in thinned forest dominated by Leguminosae (*Erythrina verna*, *Senna multijuga*, *Schizolobium parahyba*, *Inga* species) that shades cocoa plantations, from near sea-level to 550 m. Original natural habitat presumably moist, semi-deciduous lowland Atlantic Forest, now destroyed.

**Food and Feeding.** Recorded dietary items include Coleoptera (including families Curculionidae, Staphylinidae), Lepidoptera larvae and adults, ants and winged Hymenoptera, also Hemiptera, Homoptera, insect eggs, oothecae of Orthoptera, and spiders. Forages in pairs or family groups, almost always in mixed-species flocks, in canopy and subcanopy. Most foraging manoeuvres consist of hitching along undersides of branches up to 8 cm in diameter and hanging acrobatically upside-down from branches. Gleans arthropods from live foliage and flowers, and probes for items in moss on branches and bark on dead branches.

**Breeding.** Season probably in austral spring, especially Sept-Oct; nestlings in Oct. Nest helping recorded; young seen to assist in nest construction, and individual in immature plumage observed while feeding begging juvenile, which also being fed by adults. Nest an oval or nearly rectangular mass of sticks, placed usually 20-30 m up in fork of tree branch or on top of nearly horizontal branch. No further information.

#### **Movements.** Resident.

**Status and Conservation.** **VULNERABLE.** First discovered as recently as 1994. Known from many sites but all in only one very small area, and no formal protection at any localities. Total population estimated at 2500-10,000 individuals; declining as a result of habitat destruction. Cur-



rently known exclusively from the canopy of forest shading cocoa plantations, extent of which are at the mercy of fluctuating cocoa prices and competing land uses. Numbers certainly reduced dramatically during 20th century following massive habitat destruction in region; virtually all forest below 500 m, presumably the species' original habitat, has been destroyed completely or thinned dramatically to shade plantations, and remnant population of this furnariid is probably at upper elevational limit of its former range. Its survival seems entirely dependent on a man-made habitat to which it has adapted, but persistence of habitat itself depends on patterns of human land use, local profitability of plantations, and global market for cocoa. For example, some plantations already cleared and others changed to different crops following fungal disease that reduced cocoa productivity in early 1990s.

**Bibliography.** Cordeiro (2001), Pacheco *et al.* (1996a, 1996b), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Whitney *et al.* (1996).

## Genus *PREMNORNIS* Ridgway, 1909

### 168. Rusty-winged Barbtail

#### *Premnornis guttuligera*

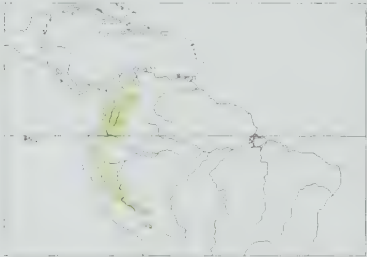
**French:** Anabassite à gouttelettes **Spanish:** Subepalo Alirrojizo  
**German:** Rostschwingen-Blattsphäer  
**Other common names:** Spotted Treerunner

**Taxonomy.** *Thripophaga guttuligera* P. L. Slater, 1864, interior of Colombia = Bogotá. Genus probably closest to *Premnoplex*, and this supported by anatomical data; both genera merged with *Margarornis* by some authors. Two subspecies recognized.

#### **Subspecies and Distribution.**

*P. g. venezuelana* Phelps, Sr. & Phelps, Jr., 1956 - NW Venezuela (Perijá Mts. and Andes of SW Táchira).

*P. g. guttuligera* (P. L. Slater, 1864) - Andes of Colombia (all three ranges), Ecuador and Peru (S to Puno).



**Descriptive notes.** 13-14 cm; 13-17 g. Small furnariid with plumage pattern that recalls that of some *Xiphorhynchus* woodcreepers. Nominative race has pale buffish or brownish-buff supercilium joining spotted collar posteriorly, broad dark brown postocular band, rest of face streaked dark brown and buff; crown dark olive-brown, paler spotting on forehead, slightly darker margins on some feathers producing faintly scalloped pattern; neck side and upper back brownish with pale dull buff spotting, blending to browner back without spots; rump faintly tinged rufescent, uppertail-coverts chestnut; wing-coverts dark brownish

with broad rufescent brown margins (form indistinct wingbars), primary coverts dark brown, remiges dark fuscous with rufescent margins; tail graduated, broad rectrices abruptly attenuated at tips, lack barbs for distal 1 mm (short "spines" difficult to see in field), chestnut; throat golden-buff with faint dark flecking; breast dark brownish with striking teardrop-shaped golden-buff spots, these lengthening into short streaks on upper belly, vanishing into lower belly; flanks and undertail-coverts rufescent brown; iris brown to dark brown; upper mandible black to dark brownish, lower mandible pinkish to pinkish-grey to dull ivory, sometimes with dark tip; tarsus and toes grey to blue-grey to pinkish-grey. Sexes alike. Juvenile has buff streaks on back and rump, more heavily spotted underparts washed rufous. Race *venezuelana* has darker, more olivaceous crown and back (less rufous tint), blacker margins on crown feathers. **Voice.** Seems to be perhaps the most characteristically silent furnariid. Fast, bouncy, accelerating "tsi-tsi-tsi-si-si-si-si-si-si", c. 1-3 seconds long, presumably as song; call note described as sharp "tseep or "tsip", sometimes run into series.

**Habitat.** Montane evergreen forest, mostly at of 2000-2750 m; locally down to 1300 m in Peru.

**Food and Feeding.** Arthropods. Generally forages singly, usually in mixed-species flocks, from understorey to mid-storey. Hops and clambers along branches, does not normally use tail for support. Less acrobatic than *Premnoplex* or *Margarornis*, feeding more like a *Philydor* foliage-gleaner. Gleans items from mossy branches and twigs, dead leaves and live foliage; sometimes "burrows" into large clumps of moss or debris.

**Breeding.** Fledglings in Dec in C Colombia; in Ecuador, fledglings in Sept in NW, Jan-Feb and Sept in NE and Nov in S. Presumably monogamous. Nest not described. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally common. Occurs in a number of protected areas, e.g. La Planada Nature Reserve, in Colombia, and Rio Palenque Science Centre, in Ecuador.

**Bibliography.** Cory & Hellmayr (1925), Cuervo *et al.* (2003), Ejlsd & Krabbe (1990), Graves (1985), Hilty (2003a), Hilty & Brown (1983, 1986), Mayr & Phelps (1967), Meyer de Schauensee & Phelps (1978), Miller (1963), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Peña (1997), Phelps & Phelps (1956), Remsen (2003a), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Rudge & Raikow (1992b), Salaman (1994), Salaman, Donegan & Cuervo (1999), Salaman, Stiles *et al.* (2002), Slotz *et al.* (1996), Willis & Schuchmann (1993), Zimmer (1934e).

## Genus *PREMNOPLEX* Cherrie, 1891

### 169. Spotted Barbtail

#### *Premnoplex brunescens*

**French:** Anabassite tachetée **Spanish:** Subepalo Moteado  
**German:** Westlicher Fleckenstachelschwanz

**Taxonomy.** *Margarornis brunescens* P. L. Slater, 1856, "Bogotá".

Genus probably closest to *Premnornis*, and this supported by anatomical data; both genera merged with *Margarornis* by some authors. Forms a superspecies with *P. tatei*, and sometimes treated as conspecific. Populations in Trujillo and Barinas (Venezuela) tentatively placed with nominate race; further study required. Proposed Panamanian races *albescens* (E Darién) and *mnionophilus* (Cerro Campana) considered indistinguishable from nominate, and *distinctus* (Veraguas) indistinguishable from *brunneicauda*. Five subspecies recognized.

#### **Subspecies and Distribution.**

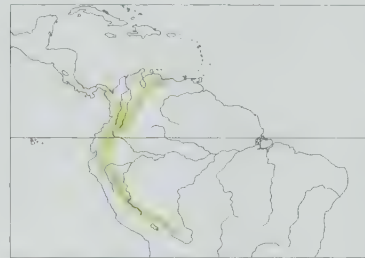
*P. b. brunneicauda* (Lawrence, 1865) - mountains of Costa Rica and W Panama (E as far as Veraguas).

*P. b. brunescens* (P. L. Slater, 1856) - cerros Tacarcuna, Pirre and Mali and Serranía de Majé (extreme E Panama and NW Colombia), Perijá Mts and Andes of W Venezuela (Trujillo, Barinas, Mérida, Táchira), S (in all three ranges in Colombia, also Macarena Mts, in S Meta) to Ecuador and Peru (S to Cuzco).

*P. b. coloratus* Bangs, 1902 - Santa Marta Mts of N Colombia.

*P. b. rostratus* Hellmayr & Seilern, 1912 - coastal mountains of N Venezuela (Lara E to Miranda and Aragua).

*P. b. stictonotus* (Berlepsch, 1901) - Andes from S Peru (Puno) S to W & C Bolivia (S to Cochabamba).



**Descriptive notes.** 13-15 cm; 14-19 g. Small, dark furnariid with a rich ventral pattern. Nominative race has a series of closely spaced tawny-ochraceous spots above and behind the eye, forming a narrow supercilium; lores dull ochraceous mixed with brownish, auriculars dark brown with tawny-ochraceous streaks; narrow and weakly defined rows of small tawny-ochraceous spots on neck extend to meet supercilium; forehead and supraloral area dark grey-brown with tawny-ochraceous spots; crown grey-brown with feathers outlined in blackish (giving scalloped appearance), spots of forehead fading into paler

centres of crown feathers; back dark brown with blackish feather edges, continuing the scalloped theme of crown but less conspicuously, rump tinged chestnut with faint scalloping, uppertail-coverts chestnut-brown; wings mostly dark brown, some darker centres of coverts, darker brown primary coverts; tail graduated, central rectrices slightly stiffened, all rectrices with distal 3-6 mm of shafts lacking barbs, producing very "spiny" appearance, inner webs fuscous brown, outer webs browner; throat tawny-ochraceous with feathers faintly margined dark brown, with brown increasing posteriorly, some birds have whitish throat ("*albescens*"); breast dull brown with conspicuous oblong tawny-ochraceous spots outlined in darker brown, spots lengthen posteriorly and continue into dull brown belly, but become smaller and less conspicuous towards vent, and become streaks (and fade posteriorly) on flanks; undertail-coverts dull brown with faint ochraceous spotting; iris brown to dark brown; upper mandible black to dark brownish, lower mandible pale greyish-pinkish to pale horn, sometimes with dark tip; tarsus and toes dark grey-brown to dark brown. Differs from similar *P. tatei* mainly in having supercilium, throat, and neck and ventral spotting ochraceous (not whitish), breast spots smaller and less dense, bill less deep. Sexes alike. Juvenile has buff shaft streaks on back, heavier scaling on throat, spots on tips of greater wing-coverts, more irregular pattern of spotting on underparts. Race *brunneicauda* differs from nominate in having back more olivaceous brown, tail browner, throat slightly paler, underparts more olivaceous with dark margins of spots less conspicuous; *coloratus* has less rufous-tinged back and uppertail-coverts, browner tail, darker, more ochraceous colour on throat extending farther into upper breast; *rostratus* is evidently like previous, but has longer bill, black tail, darker olive crown, deeper rufous back; *stictonotus* differs from nominate in having conspicuous pale shaft streaks on upper back. **Voice.** Song an explosive, high, dry, thin "eep, eep, eep, ti-ti-ti-ti-ti", trilled at end, also described as short, slightly descending trill sometimes preceded by several emphatic higher-pitched notes, sometimes slowing at end, lasts c. 1-1.5 seconds. Call a distinctive sharp "teep", "teek", or "pseek", often repeated.

**Habitat.** Montane evergreen forest, especially in areas with extensive moss and epiphytes. Mainly 1200-2300 m in Central America; 900-2600 m in Andes, but down to 650 m in W range and locally to 3000 m.

**Food and Feeding.** Reported dietary items include Coleoptera (of families Scarabaeidae, Brentidae), ants and other Hymenoptera, cockroach (Blattodea) eggs, and spiders. Unusual variation in feeding sociality reported from different areas, with some observations that it usually forages alone, whereas others indicate usually in pairs or groups (perhaps family parties), and often in mixed-species flocks. Forages in understorey, occasionally to mid-storey. Climbs and hitches along branches, occasionally vertical ones, and even slender twigs, occasionally using tail for support; occasionally hanging upside-down, and even creeping along underside of branches. Gleans and probes for arthropods on mossy branches, bark crevices, epiphytes and tree trunks.

**Breeding.** Season mainly Mar-Jun in Central America; in Andes, eggs in Mar and Jun in Ecuador, and nestlings in Apr in Colombia and Ecuador. Presumably monogamous. Nest a massive ball c. 30 cm in diameter, of mainly moss, liverworts and lichens, bound with fine rootlets, tubular entrance at bottom, tunnel 8-10 cm long leads to interior chamber 6-8 cm in diameter, lined with rootlets, moss and fine fibres; wedged in crevice or nook in fallen log, loose bark, or occasionally roots, or suspended from end of branches or underside of fallen log, usually within 2-3 m of ground, near or overhanging stream, in area of dense shade. Clutch 2 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common, locally uncommon. Occurs in numerous protected areas throughout extensive range, including Tapanti National Park and Monte Verde Forest Reserve, in Costa Rica, Henri Pittier National Park, in Venezuela, La Planada Nature Reserve and Rio Nambi Natural Reserve, in Colombia, and in Machu Picchu Historical Sanctuary, in Peru. Appears to be fairly adaptable; present in fragmented forest.

**Bibliography.** Angehr & Aueca (1997), Angehr & Christian (2000), Anon. (1998a), Chapman (1926), Collins (1972), Collins *et al.* (1991), Cory & Hellmayr (1925), Ejlsd & Krabbe (1990), Graves (1985), Hilty (1997, 2003a), Hilty & Brown (1983, 1986), Marin & Carrión (1994), Mayr & Phelps (1967), Miller (1963), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Powell (1983), Remsen (2003a), Remsen & Traylor (1989), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Robbins *et al.* (1985), Rodner *et al.* (2000), Rudge & Raikow (1992b), Salaman (1994), Salaman, Donegan & Cuervo (1999), Salaman, Stiles *et al.* (2002), Schulenberg (2002), Skutch (1967), Slud (1964), Stiles (1985), Stiles & Skutch (1989), Slotz *et al.* (1996), Todd & Carriker (1922b), Wetmore (1951, 1972), Willis & Schuchmann (1993), Young *et al.* (1998), Zimmer (1930, 1934e).



## 170. White-throated Barbtail

### *Premnoplex tatei*

**French:** Anabasis à gorge blanche **Spanish:** Subepalo Gorgiblanco  
**German:** Östlicher Fleckenstachelschwanz  
**Other common names:** Paria Barbtail (*pariae*)

**Taxonomy.** *Premnoplex tatei* Chapman, 1925, Mount Turumiquire, 7900 feet [c. 2400 m], north-eastern Venezuela.

Genus probably closest to *Premnornis*, and this supported by anatomical data; both genera merged with *Margarornis* by some authors. Forms a superspecies with *P. brunnescens*, and sometimes treated as conspecific. Two subspecies recognized.

#### Subspecies and Distribution.

*P. t. tatei* Chapman, 1925 - Cordillera de Caripe in NE Anzoátegui and S Sucre, and N Monagas (Cerro Negro), in NE Venezuela.

*P. t. pariae* Phelps, Sr. & Phelps, Jr., 1949 - cerros Humo and Azul, in Paria Peninsula (N Sucre).



**Descriptive notes.** 14-15 cm. Nominate race has whitish supercilium, dark brownish auriculars and neck side streaked whitish; forehead and crown dark grey-brown, feathers outlined in blackish (giving scalloped appearance); upperparts dark grey-brown, tinged rufous; wings mostly dark fuscous; tail graduated, central rectrices slightly stiffened, all with distal 3-6 mm of shafts lacking barbs, producing very "spiny" appearance, dark fuscous; throat to upper breast whitish, rest of underparts dark brownish with whitish streak-like spotting; iris dark brown; upper mandible black, lower mandible pale greyish-pink, often with black tip; tarsus and toes

dark grey-brown to black. Differs from similar *P. brunnescens* primarily in having supercilium, throat, and neck and ventral spotting whitish, breast spots also denser and larger, and bill thicker. Sexes alike. Juvenile undescribed. Race *pariae* described as having crown darker, throat nearly pure buff, underparts more dusky and darker brown, light markings below more extensive, breast with less distinct markings, belly with wider whitish streaks. **Voice.** Song low-pitched, doubled or tripled, whistled notes; also (nominate race) described as bubbly series of low, soft, reedy whistles, "we-whür, we-whür, we-héet", thus unlike that of *P. brunnescens*.

**Habitat.** Montane evergreen forest; wet, mossy forest, especially where dominated by small palms and Arecaceae. At 1100-2400 m; race *pariae* 800-1200 m.

**Food and Feeding.** Arthropods. Forages solitarily or in pairs, possibly regularly in mixed-species flocks, in undergrowth. Gleans items from logs and boulders 0-2-3 m above ground; possibly less acrobatic than *P. brunnescens*.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Caripe-Paria Region EBA. Uncommon to rare, and possibly very local; absent from some apparently suitable areas. Total population estimated at 2500-10,000 individuals; declining as a result of habitat destruction. Formerly fairly common, but numbers have undoubtedly been reduced dramatically by deforestation within its tiny range. Nominate race recorded only once in last 50 years; most surviving forest in Caripe Mts is badly degraded, despite official protection in Cueva del Guácharo National Park. Known localities of race *pariae* almost entirely within Paria Peninsula National Park, but forest in this park, because it receives no proper protection, is being destroyed by burning and cultivation; estimates of up to 2-4 pairs/ha, if correct, suggest high density in remaining habitat. Surveys needed in order to determine more accurately current populations of both races.

**Bibliography.** Boesman & Curson (1995), Chapman (1925), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Colvée (1999), Evans *et al.* (1994), Gabaldón (1992), Hilty (1999, 2003a), Mayr & Phelps (1967), Meyer de Schauensee & Phelps (1978), Phelps & Phelps (1949), Renjifo *et al.* (1997), Ridgely & Tudor (1994), Rodner *et al.* (2000), Rodríguez & Rojas-Suárez (1995), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wege & Long (1995).

## Genus RORAIMIA Chapman, 1929

### 171. Roraiman Barbtail

#### *Roraimia adusta*

**French:** Anabasis du Roraima **German:** Tepuistachelschwanz **Spanish:** Subepalo del Roraima

**Taxonomy.** *Synallaxis adusta* Salvin and Godman, 1884, Mount Roraima, 6000 feet [c. 1830 m], Bolívar, Venezuela.

Genus merged into *Margarornis* by some authors, whereas others suspect that it is closer to *Premnoplex* or *Premnornis*; anatomical data are consistent with the idea that all are each others' closest relatives, but that present genus does not fit into any of the others. Species was at one time mistakenly considered to be a race of *Synallaxis cinnamomea*. Four subspecies recognized.

#### Subspecies and Distribution.

*R. a. obscuradorsalis* Phelps, Sr. & Phelps, Jr., 1948 - Cerro Paraque, in SE Venezuela (extreme NW Amazonas).

*R. a. duidae* Chapman, 1939 - tepuis of S Venezuela in C & S Amazonas (Mt Duida, Cerro Huachamacari, Serranía Parí).

*R. a. mayri* Phelps, Jr., 1977 - Cerro Jaua (S Bolívar).

*R. a. adusta* (Salvin & Godman, 1884) - SE Venezuela (Mt Roraima and associated tepuis in SE Bolívar), N Brazil (Mt Roraima) and W Guyana (Mt Tewk-quay).

**Descriptive notes.** 14-15 cm; 14-20 g. Strikingly patterned furnarid that is morphologically similar to a *Margarornis* treerunner. Has broad, conspicuous bright chestnut supercilium extending to nape and mantle, dark blackish-brown lores and auriculars; bright chestnut forehead, dark brown crown, chestnut back, rump and uppertail-coverts; wing-coverts dusky brown with chestnut edges, remiges chestnut-tinged; tail graduated, rectrices with stiffened shafts that lack barbs for distal 1-3 mm, chest-



nut; throat and malar area white, tinged creamy on lower throat; underparts streaked brown and buff, fading in intensity posteriorly, flanks dark reddish-brown, undertail-coverts rufescent brown with more reddish shaft streaks; iris brown; upper mandible black, pinkish at gape, lower mandible pinkish or flesh-coloured with black distal third; tarsus and toes brownish-grey. Sexes alike. Juvenile has supercilium indistinct or absent, back less reddish, throat feathers tipped grey-brown, less distinct streaks on underparts. Races described as differing from nominate as follows: *obscuradorsalis* darker overall, back with blackish edgings; *duidae*

slightly brighter above, supercilium and nape more chestnut than bay (i.e. less reddish), supercilium extending farther back; *mayri* (described from 4 specimens) as having back browner, less chestnut. **Voice.** Song 7-8 clear notes that ascend rapidly, "tee-tee-tee-teuu-teuu-tuutuu".

**Habitat.** Montane evergreen forest and elfin forest, often stunted, mossy and epiphyte-laden; also mossy second growth. At 1000-2500 m.

**Food and Feeding.** Arthropods. Forages usually singly or in pairs, and regularly in mixed-species flocks, in undergrowth. Hitches and creeps up trunks and branches. Gleans items from moss and epiphytes on vertical trunks, branches and vines, mainly within 1-6 m of ground.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Tepuis EBA. Generally uncommon; possibly more common on Mt Roraima. Rather difficult to detect; possibly overlooked. Well protected in Canaima National Park, in Venezuela.

**Bibliography.** Barnett *et al.* (2002), Chapman (1931, 1939), Hilty (2003a), Lentino *et al.* (1998), Mayr & Phelps (1967, 1971), Meyer de Schauensee & Phelps (1978), Phelps (1977a), Pinto (1978), Renjifo *et al.* (1997), Ridgely & Tudor (1994), Rodner *et al.* (2000), Rudge & Raikow (1992b), Sick (1993, 1997), Snyder (1966), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

## Genus MARGARORNIS Reichenbach, 1853

### 172. Ruddy Treerunner

#### *Margarornis rubiginosus*

**French:** Anabasis rousse **German:** Rostbrust-Stachelschwanz **Spanish:** Subepalo Rojizo  
**Other common names:** Ruddy Margarornis

**Taxonomy.** *Margarornis rubiginosa* Lawrence, 1865, San José, Costa Rica.

Anatomical data are consistent with the idea that this genus and *Premnornis*, *Premnoplex* and *Roraimia* are each others' closest relatives; various authors merge one or all of those into present genus. Two subspecies recognized.

#### Subspecies and Distribution.

*M. r. rubiginosus* Lawrence, 1865 - mountains of Costa Rica (S from S Cordillera Guanacaste) and W Panama (W Chiriquí).

*M. r. boultoni* Griscom, 1924 - mountains of C Panama (E Chiriquí, Veraguas).



**Descriptive notes.** 14-16 cm; 17-24 g. Very reddish-brown furnarid that forages much like a dendrocolaptid woodcreeper. Has supercilium and broad eyering buffy whitish, flecked brownish, giving "messy" look; rest of face dull rufescent brown; crown dull reddish-brown, vague narrow collar paler, less reddish; back to uppertail-coverts reddish-chestnut; wing-coverts reddish-chestnut, primary coverts dark brown, remiges dark fuscous with rufescent margins; tail graduated, rectrices with shafts stiffened basally and lacking barbs for distal 1-7 mm, producing "spiny" appearance, colour slightly paler than back; throat whitish,

becoming buffy white on lower border; breast dull rufescent brown with small pale buff V-shaped markings on upper breast, rounded darker buff spots with dark shaft streaks in centre of breast; belly dull rufescent brown with only hint of markings, flanks and undertail-coverts darker, more chestnut-brown; iris dark brown to brown; upper mandible black to brown, lower mandible pinkish-horn to pale pinkish-white; tarsus and toes greyish-olive to dull pinkish to greyish-brown (source of variation uncertain). Sexes alike. Juvenile has less distinct markings on breast, faint sooty margins of throat feathers. Race *boultoni* is generally brighter and more rufescent above and below, with pale spotting on breast reduced or absent. **Voice.** Call a thin, whistled "tsit", usually in rapid, irregular series; also gives metallic chirping notes and a trill.

**Habitat.** Montane evergreen forest at 1800-3000 m; locally down to 1200 m.

**Food and Feeding.** Analysis of stomach contents indicates diet consisting of (in terms of numbers of prey items) nearly 50% cockroach (Blattodea) egg cases, c. 10-15% each of Coleoptera, spiders and various flying insects, and smaller percentages of insect larvae, Orthoptera, Heteroptera and Dermaptera. Forages singly or in pairs, usually in mixed-species flocks, from understorey to canopy. Scansorial, regularly ascends limbs and trunks like a woodcreeper (Dendrocolaptidae); highly acrobatic, often foraging upside-down on undersides of branches. Gleans and probes for arthropods on branches and epiphytic vegetation, rarely also on dead leaves and bare branches. In one detailed study, over 95% of foraging manoeuvres were directed at epiphytic vegetation; of these, over 70% directed at bryophytes and fruticose lichens hanging from branches and c. 25% at bryophyte mats on branches.

**Breeding.** fledglings recorded in Mar-Jul. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Costa Rica and Panama Highlands EBA. Fairly common to common. Seems to be fairly adaptable; found in fragmented forest.

**Bibliography.** Anon. (1998a), Blake & Loiselle (2000), Cory & Hellmayr (1925), Delgado (1985), Hernández *et al.* (1995), Remsen (2003a), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Rudge & Raikow (1992b), Sillett



(1994), Slud (1964), Stattersfield *et al.* (1998), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Wetmore (1972), Young *et al.* (1998).

## 173. Fulvous-dotted Treerunner

### *Margarornis stellatus*

**French:** Anabasis étoilée

**German:** Schmuckbrust-Stachelschwanz

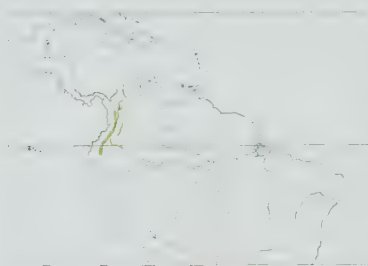
**Spanish:** Subepalo Estrellado

**Other common names:** Star-chested Treerunner

**Taxonomy.** *Margarornis stellatus* P. L. Slater and Salvin, 1873, Province of Quito, Ecuador.

Anatomical data are consistent with the idea that this genus and *Premmornis*, *Premnoplex* and *Roraimia* are each others' closest relatives; various authors merge one or all of those into present genus. Monotypic.

**Distribution.** W & C Andes of Colombia (S from S Chocó, and in Antioquia) and W Ecuador (S to Chimborazo).



**Descriptive notes.** 13-14 cm; 21-22 g. Has broad but ill-defined supercilium dull rufescent brownish, auriculars dull reddish-brown, moustachial area more rufescent, crown dark reddish-brown, upperparts slightly paler; wing-coverts reddish-brown, primary coverts dark fuscous, remiges dark fuscous with dark rufescent edges; tail graduated, rectrices stiffened basally, lacking or almost lacking barbs for distal 1-6 mm, shafts of central pairs curving slightly downwards and inwards, colour dark reddish-brown; throat mostly whitish, upper breast strikingly patterned, a few rows of broad whitish spots outlined in blackish fol-

lowed by several rows of smaller elongate whitish spots more conspicuously outlined, set on rufous-brown background, spots becoming smaller and vanishing into rufous-brown on lower breast, belly, flanks and undertail-coverts; iris dark brown; upper mandible horn to whitish-horn with browner base and culmen, lower mandible horn; tarsus and toes greyish to brownish. Sexes alike. Juvenile undescribed. **Voice.** Undescribed; evidently seldom vocalizes.

**Habitat.** Montane evergreen forest heavily laden with moss and epiphytes, at 1200-2200 m; mostly at c. 1600 m in Ecuador.

**Food and Feeding.** Arthropods; Lepidoptera larvae 15 cm long recorded in diet. Forages singly or in pairs, usually in mixed-species flocks, from mid-storey to subcanopy. Hitches and clambers up or along branches; often forages upside-down acrobatically on undersides of branches, often uses tail for support. Gleans items from moss, epiphytes (including bromeliads) and bark, occasionally from leaves.

**Breeding.** Copulation observed in Feb. and adult carrying food in Apr. No further information available.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Chocó EBA. Rare to locally uncommon; rare to very rare and local in Ecuador, and recently listed as vulnerable in that country. Narrow elevational range means that global population is relatively small. Formerly regarded as reasonably common in Colombia, but much habitat within its range in that country has been lost; occurs in La Planada Nature Reserve. Restriction to lower montane cloudforest makes it highly vulnerable to deforestation; continuing rapid clearance of forest in Chocó region of Colombia a major threat.

**Bibliography.** Anon. (2003g), Chapman (1917), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Granizo (2002), Hilty & Brown (1983, 1986), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Salaman (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Stewie (2001).

## 174. Beautiful Treerunner

### *Margarornis bellulus*

**French:** Anabasis superbe

**German:** Nördlicher Perlstachelschwanz

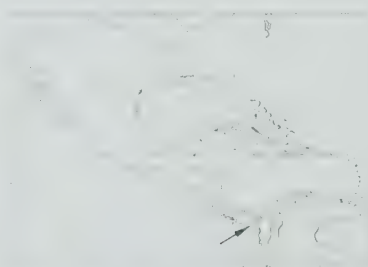
**Spanish:** Subepalo Bonito

**Other common names:** Beautiful Margarornis

**Taxonomy.** *Margarornis bellulus* Nelson, 1912, Cerro Pirre, 4500 feet [c. 1370 m], near head of Río Limón, Darién, Panama.

Anatomical data are consistent with the idea that this genus and *Premmornis*, *Premnoplex* and *Roraimia* are each others' closest relatives; various authors merge one or all of those into present genus. Sister-species to *M. squamiger*, and very likely conspecific. Monotypic.

**Distribution.** Cerro Tacarcuna, Cerro Mali, Cerro Pirre, Altos de Quia and Serranía de Majé, in extreme E. Panama.



**Descriptive notes.** 14-15 cm; 18-19 g. Has buffish-white supercilium extending from supraloral region back to collar, dull reddish-brown postocular line, dark brown auriculars streaked whitish; dark brown moustachial area with small white spots, these broadening into stripes posteriorly and merging into collar; crown olive brown; upperparts and wing-coverts warm olive-brown, primary coverts darker, remiges dark fuscous with tawny-ochraceous margins; tail graduated, shafts stiffened and lacking barbs or nearly so for distal 3-7 mm, shafts curve downwards distally, dull reddish-brown; throat whitish; underparts rufescent

brown, upper breast with white to yellowish-white oval spots narrowly outlined dark brownish, these coalescing into irregular rows that extend into lower breast, then becoming more elongate and narrow on lower underparts; iris brown; upper mandible brownish, lower mandible pinkish; tarsus and toes grey. Differs from very similar *M. squamiger* (of race *perlatus*) mainly in having upperparts brown, rather than chestnut, duller tail, more ochraceous flight-feather edgings, more rufescent underparts, reduced spots on breast and belly. Sexes alike. Juvenile undescribed. **Voice.** A short trill has been heard.

**Habitat.** Montane evergreen forest, at 1350-1600 m; rarely to 900 m.

**Food and Feeding.** Arthropods. Usually seen in mixed-species flocks. Scansorial; also highly acrobatic, often foraging upside-down on undersides of branches. Gleans food items from branches and epiphytic vegetation, primarily in subcanopy.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Darién Highlands EBA. Appears to be rare within its tiny range. No data available on population size or trends. All areas where it occurs, except Serranía de Majé, are within legally protected Darién National Park; even so, some habitat within the park has nevertheless been cleared. Degradation and clearance of forest at lower elevations could extend to the higher levels occupied by this species; in such a case, the potential threat would undoubtedly become serious.

**Bibliography.** Angehr & Christian (2000), Anon. (1998a), Cory & Hellmayr (1925), Delgado (1985), Remsen (2003a), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Robbins *et al.* (1985), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wetmore (1972).

## 175. Pearled Treerunner

### *Margarornis squamiger*

**French:** Anabasis perlée

**German:** Südlicher Perlstachelschwanz

**Spanish:** Subepalo Perlado

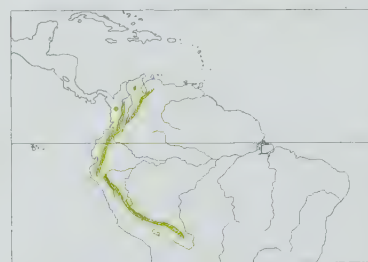
**Taxonomy.** *Anabates squamiger* d'Orbigny and Lafresnaye, 1838, Ayopaya, Cochabamba, Bolivia. Anatomical data are consistent with the idea that this genus and *Premmornis*, *Premnoplex* and *Roraimia* are each others' closest relatives; various authors merge one or all of those into present genus. Sister-species to *M. bellulus*, which very likely conspecific. Sight record in NW Argentina presumably referable to nominate race or, possibly, an undescribed race. Three subspecies recognized.

**Subspecies and Distribution.**

*M. s. perlatus* (Lesson, 1844) - Perijá Mts and Andes of W Venezuela (Trujillo, Mérida, Táchira), Colombia (all three ranges), Ecuador, and N Peru N of R Marañón (Piura, N Cajamarca).

*M. s. peruvianus* Cory, 1913 - Andes of N & C Peru S of R Marañón (from S Cajamarca and Amazonas S to Cuzco).

*M. s. squamiger* (d'Orbigny & Lafresnaye, 1838) - Andes of S Peru (Puno) and Bolivia (S to W Santa Cruz); sight record in NW Argentina (Salta).



**Descriptive notes.** 15-16 cm; 14-19 g. Strikingly patterned furnariid. Nominat race has sharply defined yellowish-buff supercilium extending from supraloral region back to collar, dull reddish-brown postocular line; auriculars dull yellowish-buff and dark brown; moustachial area dark brown with indistinct tiny spots, these broadening into stripes posteriorly and merging into collar; forehead dark brownish with dull pale rufous streaks, crown dark reddish-brown; collar dull rufescent brown, nearly completely covered by yellowish-buff elongated spots outlined in black, these fading and then disappearing in centre

of collar; back to uppertail-coverts bright reddish-brown; wing-coverts bright reddish-brown, primary coverts darker fuscous brown, remiges dark fuscous with rufescent margins; tail graduated, shafts stiffened and lacking barbs or nearly so for distal 3-7 mm, curving downwards distally, bright reddish-brown; throat bright buff-yellow, becoming more yellow along lower margin; upper breast a dense set of yellowish oval spots narrowly outlined dark brownish, these overlapping and coalescing into irregular rows that extend to lower breast, there becoming elongate, narrower and less distinct, exposing more of the dull rufescent ground colour of breast and belly; flanks darker rufescent with longer spots; undertail-coverts rufescent brown with few buff-yellowish streaks outlined in blackish; iris brown to dark brown; upper mandible black to grey, lower mandible whitish-horn to purplish-pink, sometimes with dark tip; tarsus and toes brownish-grey to dark brown. Sexes alike. Juvenile has more irregular pattern of spotting on breast, throat feathers tipped dusky, crown less uniform. Race *peruvianus* differs strongly from nominate in having olive-brown crown, much less yellowish spotting on underparts, supercilium not so deeply yellow, auriculars less rufous and more heavily streaked; *perlatus* is very similar to previous, but has supercilium whitish (not yellowish), slightly whiter spotting on underparts. **Voice.** Song a rapid series of high-pitched, thin "tick" notes, lasting c. 1-5 seconds. Call a single high-pitched "tick" or "tsit" note, like those in song; also short trill, "trrr-trrrr".

**Habitat.** Montane evergreen forest and elfin forest; also locally ranging into *Polylepsis* woodland, and second growth; most common in mossy, epiphyte-laden, stunted, high-elevation forest. Mostly 2500-3500 m; locally down to 1500 m and up to 3800 m.

**Food and Feeding.** Arthropods. Usually in pairs, less often singly or in groups of up to eight individuals; commonly in mixed-species flocks. Forages from mid-storey to canopy; mean foraging height in Bolivian high-elevation forest was 4-9 m above ground and 2-4 m from top of canopy. Scansorial, forages like a small woodcreeper (Dendrocolaptidae), hitches along mossy trunks and branches; highly acrobatic, often foraging upside-down on undersides of branches. Gleans items primarily from moss and epiphytic vegetation, less often bark, and occasionally from dead leaves, on horizontal or vertical branches, mostly 3-15 cm diameter.

**Breeding.** Fledglings seen in Jun in Venezuela, May in C Colombia, Jul in C Peru, and Mar and Dec in C Bolivia. Presumably monogamous. Nest a ball of moss with side entrance, placed under a limb or rock. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common. Occurs in a number of protected areas, including Sierra Nevada and Guarumacal National parks, in Venezuela, Munchique National Park, in Colombia, and Podocarpus National Park, in Ecuador; rather common in Machu Picchu Historical Sanctuary, in Peru. Tolerates at least mild forest fragmentation and disturbance.

**Bibliography.** Alonso *et al.* (2001), Cory & Hellmayr (1925), Cuervo *et al.* (2003), Di Giacomo *et al.* (1995), Fjeldså & Krabbe (1990), Graves (1985), Hilty (2003a), Hilty & Brown (1983, 1986), Mayr & Phelps (1967), Mazar Barnett & Pearman (2001), Olivares (1969), Pacheco *et al.* (1996a), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Pearman (1994c), Peters & Griswold (1943), Poulsen (1996), Remsen (1985, 2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Rudge & Raikow (1992b), Salaman (1994), Salaman *et al.* (1999), Stotz *et al.* (1996), Vuilleumier & Ewert (1978), Willis & Schuchmann (1993), Zimmer (1930, 1934c).



# Genus *PSEUDOSEISURA* Reichenbach, 1853

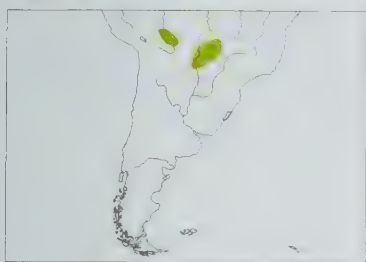
## 176. Grey-crested Cachalote

### *Pseudoseisura unirufa*

**French:** Cacholote uni **German:** Hellbrauner Cachalote **Spanish:** Cacholote Crestigris  
**Other common names:** Rufous/Rufous-breasted Cachalote (when treated as conspecific with *P. cristata*)

**Taxonomy.** *Anabates unirufus* d'Orbigny and Lafresnaye, 1838, Moxos (= Beni), Bolivia. Genus has no obvious close relatives within the family. Present species forms a superspecies with *P. cristata*; formerly treated as conspecific, but differs ecologically and vocally (important differences in vocalizations demonstrated by playback experiments), and possibly also in social system and nest architecture. Despite the geographical isolation of the two populations of the present species, there are no evident plumage differences that would warrant the naming of subspecies. Monotypic.

**Distribution.** NC & E Bolivia (Beni, extreme NW & SE Santa Cruz), SW Brazil (S Mato Grosso, Mato Grosso do Sul) and N Paraguay (Alto Paraguay).



**Descriptive notes.** 20-21 cm; 42-57 g. Large, rather uniformly coloured furnariid with crest. Has rather uniform bright reddish-rufous face; crown reddish-rufous, feathers elongated to form slight crest, some feathers with dull greyish tips and margins; upperparts and wings bright reddish-rufous, dark fuscous tips of remiges; tail nearly square, outer pair of rectrices c. 2 cm shorter than rest, shafts of all without barbs for distal 2-3 mm, bright reddish-rufous; underparts almost uniform bright reddish-rufous, slightly paler than back; centre of throat slightly different shade, more orange-tinged; iris yellow to buff-yellow; bill

blue-grey to grey, sometimes darker along culmen, usually paler on lower mandible; tarsus and toes olive to greenish-grey. Differs from extremely similar *P. cristata* in darker plumage coloration, significantly shorter bill (no overlap in measurements). Sexes alike. Juvenile has shorter crest, is less uniform in colour. **VOICE.** Song usually given as duet that lasts c. 6 seconds, presumed male 4-10 evenly spaced notes followed by accelerating series that becomes a rattle, with overall descending, bouncing-ball pattern (pitch slightly lower than that of *P. cristata*), presumed female a series of well-spaced "chep" notes (faster than *P. cristata* series); presumed male also gives chatter c. 1-5 seconds long, often between duet bouts. Call a single "chuk".

**Habitat.** Gallery forest, seasonally flooded savannas, often near marshes; regularly near human habitations. At 300-500 m.

**Food and Feeding.** Little known. Mostly arthropods; recorded items include fruit, and also probably fruit seeds. Usually in pairs. Mainly terrestrial; apparently gleans, probes, and digs for arthropods primarily on ground.

**Breeding.** Season presumably during austral spring-summer. Presumably monogamous. Nest an oblong mass, c. 60 × 30 × 30 cm, made of twigs and small branches, some as long as 50-60 cm, large feathers, snail shells, crab carapaces, and bones incorporated into exterior, entrance at bottom, interior tunnel leads upwards and enters spherical inner chamber from above, chamber c. 20 cm in diameter, lined with bark and bits of snakeskin; placed 4-5 m up in tree. No further information available.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Common around ranch houses and other human habitations. Not particularly well known.

**Bibliography.** Cory & Hellmayr (1925), Hayes (1995), Naumburg (1930), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Tudor (1994), Short (1975), Stotz *et al.* (1996), Zimmer & Whittaker (2000).

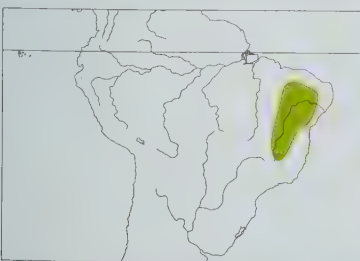
## 177. Caatinga Cachalote

### *Pseudoseisura cristata*

**French:** Cacholote roux **German:** Zimbrauner Cachalote **Spanish:** Cacholote de la Caatinga  
**Other common names:** Rufous/Rufous-breasted Cachalote (when treated as conspecific with *P. unirufa*)

**Taxonomy.** *Anabates cristatus* Spix, 1824, Malhada, Rio São Francisco, Bahia, Brazil. Genus has no obvious close relatives within the family. Present species forms a superspecies with *P. unirufa*; formerly treated as conspecific, but differs ecologically and vocally (important differences in vocalizations demonstrated by playback experiments), and possibly also in social system and nest architecture. Monotypic.

**Distribution.** E Brazil (E Maranhão, Paraíba and Pernambuco S to C Minas Gerais).



**Descriptive notes.** 26 cm. Large, crested furnariid. Plumage is rather uniform bright reddish-rufous, paler and brighter below; crest feathers tipped and edged greyish, remiges tipped fuscous; tail nearly square, distal 2-3 mm of shafts lacking barbs; iris yellow; colours of bill and legs undocumented. Differs from extremely similar *P. unirufa* in paler plumage coloration, significantly longer bill (no overlap in measurements). Sexes alike. Juvenile has shorter crest, is less uniform in colour, with variable amounts of dusky streaking or barring on face and underparts, also bluish-grey iris. **VOICE.** Song usually given as duet

that lasts c. 7 seconds, presumed male 4-10 evenly spaced notes followed by accelerating series that becomes a rattle, with overall descending, bouncing-ball pattern (slightly higher-pitched than that of *P. unirufa*), presumed female a series of 15-35 well-spaced buzzy "zjeep" notes (slower and more strident than that of *P. unirufa*); presumed male also gives chatter that lasts c. 2 seconds, often between duet bouts. Call a single "chuk".

**Habitat.** Tropical deciduous forest; *caatinga* woodland and scrub, especially where overgrazed; common around human habitations in rural areas. At 50-500 m.

**Food and Feeding.** Recorded dietary items are Lepidoptera, Coleoptera, and vegetable matter. Usually in pairs. Mostly terrestrial; evidently gleans, probes and digs for arthropods primarily on ground.

**Breeding.** Season not documented. Probably mainly monogamous, but some breeding units seem to contain 3-4 individuals in adult plumage, all of which feed nestlings. Locality data in some nest descriptions vague, and uncertain whether some of following detail applies to this species alone or also to *P. unirufa*: nest a large elongated mass 90-100 cm long, 50 cm wide, of usually thorny sticks, some as large as 60 cm long and 1 cm in diameter, with large feathers, bone fragments and snail shells often incorporated, tunnel leading from entrance hole near upper end to spherical inner chamber c. 20 cm in diameter, lined with pieces of bark and snake skin; placed in fork of tree or on telephone pole. Clutch size not documented; single juveniles, presumably from previous brood, may remain with adults during subsequent nesting and may help with nest-building.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Common, especially where *caatinga* severely degraded or overgrazed. Density often rather high; pairs typically separated from nearest neighbour by c. 300-400 m. Occurs in several protected areas, e.g. Cavernas do Peruaçu National Park. Has extended its range locally where forest has been cleared.

**Bibliography.** Azevedo (1989), Cory & Hellmayr (1925), Kirwan *et al.* (2001), do Nascimento *et al.* (2000), Parrini *et al.* (1999), Pinto (1978), Ridgely & Tudor (1994), Schubart *et al.* (1965), Sick (1993, 1997), Stotz *et al.* (1996), Tubelis & Tomás (1999), Willis & Oniki (1990, 1991), Zimmer & Whittaker (2000).

## 178. Brown Cachalote

### *Pseudoseisura lophotes*

**French:** Cacholote brun **German:** Dunkelbrauner Cachalote **Spanish:** Cacholote Castaño

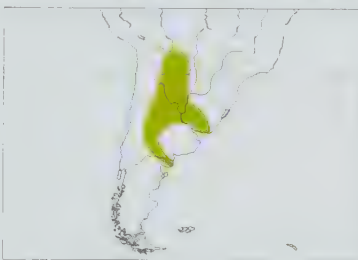
**Taxonomy.** *Homorus lophotes* Reichenbach, 1853, Guanacos, 700 m, c. 32 km ESE of Cabezas, Cordillera, Santa Cruz, Bolivia.

Genus has no obvious close relatives within the family. Plumage similarities suggest that this species is most closely related to *P. unirufa* and *P. cristata*. Two subspecies recognized.

**Subspecies and Distribution.**

*P. l. lophotes* (Reichenbach, 1853) - S Bolivia (S Santa Cruz, E Tarija) and W Paraguay.

*P. l. argentina* Parkes, 1960 - N & C Argentina (Catamarca, Santiago del Estero and Corrientes S to Mendoza, La Pampa and Buenos Aires), extreme SE Brazil (W Rio Grande do Sul) and Uruguay.



**Descriptive notes.** 24-26 cm; 63-79 g. One of the largest furnariids, somewhat resembling a jay (Corvidae). Has rather uniform dull dark rufous face; forehead dull dark reddish-brown; crown darker brown with darker feather margins, producing slightly streaked look, feathers elongated to form crest, hindcrown bright rufous (covered by crest feathers when flattened); upper back and vague collar rufous, rest of back duller with some greyish feather edges, rump bright rufous, uppertail-coverts slightly darker; wing-coverts dull dark rufous-brown with some paler tips, remiges dark fuscous brown with narrow pale brownish margins; tail

slightly rounded, shafts stiffened basally and nearly lacking barbs at tips, dull dark rufous; throat bright cinnamon-rufous, blending to duller darker breast with increasingly conspicuous paler tips of feathers posteriorly, this pattern extending into belly and flanks, producing "frosted" look; lower belly, flanks and undertail-coverts more rufescent, longest undertail-coverts with broad pale tips; iris yellow to buff-yellow; upper mandible usually black with grey base, lower mandible light grey basally, blackish distally; tarsus and toes greyish-olive to dull greenish. Sexes alike. Juvenile has shorter crest, lightly mottled breast and belly, dull greenish iris. Race *argentina* described as darker throughout, with anterior crest feathers less grey-brown, more rufous, and narrower. **VOICE.** Song, usually as duet, a long, loud series of variably cacophonous, grating, coarse notes that gradually fades towards end, can last at least 15 seconds; call "krok".

**Habitat.** Tropical deciduous forest, gallery forest edge, second-growth scrub; Chaco woodland and scrub, *monte* and *espinillo* (*Prosopis-Acacia*) woodland; urban parks and gardens. From near sea-level to 900 m.

**Food and Feeding.** Reported dietary items are Coleoptera (including families Curculionidae, Scarabaeidae, Chrysomelidae, Carabidae), larval insects, large ants, also eggs of other birds (including domestic chickens), seeds, some fruit. Forages usually in pairs or in small single-species flocks. Gleans, probes and digs for arthropods in ground and leaf litter; flakes dung to search for arthropods underneath; occasionally hammers and pulls bark and leaf buds.

**Breeding.** Season during austral spring-summer; eggs from late Sept to Feb, mean initiation date in W Argentina 19th Nov. Monogamous; probably pairs for life. Nest a large mass c. 50-150 cm long and 45-90 cm wide, weight 2-5.5 kg, main axis horizontal or diagonal, made of sticks (some up to 75 cm long, to 1 cm in diameter), external lateral entrance tube c. 30-40 cm long supported by horizontal branch, long feathers often incorporated into outside of nest, inner chamber 20-25 cm in diameter, often no lining, occasionally a few bits of plant material, small sticks or dung; placed 4-6 m above ground near crown of small tree (especially *Prosopis*), often isolated, with branches of tree incorporated into nest; frequently placed on previous years' nests. Clutch 2-4 eggs, mean 2.6; incubation by both adults, period 18-20 days; both also feed chicks, nestling period 18-23 days; young remain in parental territory for 5-13 months, but not nest helpers. Success: 59% of eggs produce fledglings, with mean of 1-5 fledglings per clutch; last-hatched nestlings in broods of three usually die, as do all in broods of four; older pairs have significantly higher reproductive success; nest predation, mainly by white-eared opossum (*Didelphis albiventris*), main source of mortality.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout range. Occurs in several protected areas, e.g. Chancani Natural Reserve, in Argentina.

**Bibliography.** Aravena (1928), Belton (1984), Bodrati *et al.* (2001), Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Cuervo (1985), Eberhard (1996), Fraga & Narosky (1985), Friedmann (1927), Hayes (1995), Kratter *et al.* (1993), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Navas & Bó (1987), Norez, A.I. (1995), Norez, A.I. & Norez, M. (1994a, 1994b), Norez, M. *et al.* (1983), Ochoa (1971), Olog (1963a), Parkes (1960), Partridge (1953), de la Peña (1987, 1988, 1996), Pinto (1978), Remsen & Traylor (1989), Ridgely & Tudor (1994), Rodríguez (1918), Serié & Smyth (1923), Short (1975), Sick (1993, 1997), Smyth (1928), Stotz *et al.* (1996), Wetmore (1926), Zotta (1940).



## 179. White-throated Cachalote

### *Pseudoseisura gutturalis*

**French:** Cachalote à gorge blanche **German:** Weißkehlcachalote **Spanish:** Cachalote Pardo

**Taxonomy.** *Anabates gutturalis* d'Orbigny and Lafresnaye, 1838, mouth of Río Negro, Patagonia, Argentina.

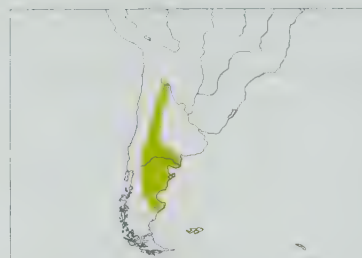
Genus has no obvious close relatives within the family. Geographical boundary between race *ochroleuca* and nominate controversial; thorough analysis required. Two subspecies recognized.

#### **Subspecies and Distribution.**

*P. g. ochroleuca* Olog, 1959 - Andean foothills and valleys in N & C Argentina (W Salta S to San Juan and La Rioja).

*P. g. gutturalis* (d'Orbigny & Lafresnaye, 1838) - lowlands and foothills of C Argentina (Mendoza, La Pampa and S Buenos Aires S to NE Santa Cruz).

**Descriptive notes.** 22-23 cm; 63-79 g. Large, dull furnariid with conspicuous white throat. Has white eyering, supraloral area and lores; rest of face, crown and upperparts nearly uniform dark dull brownish-grey; crown feathers slightly elongated; wings much like upperparts, coverts and remiges with slightly paler edges; tail slightly rounded, shafts slightly stiffened, lack or almost lack barbs for distal 1-4 mm, dark fuscous grey, slightly paler on outer webs; chin and most of throat white, sharply demarcated from malar area, centre of lower throat blackish with some paler grey feather tips; breast and belly dull brownish-grey, paler than back, with many feathers tipped greyish-white, producing "frosted" look, vent and undertail-coverts slightly paler; iris yellow to creamy buff or dark brown; upper mandible dark grey, lower mandible pale bluish with dark grey tip; tarsus and toes grey. Sexes alike. Juvenile has lightly mottled or barred breast and belly. Race *ochroleuca* was described as generally paler and sandier in colour throughout. **Voice.** Song perhaps the loudest in family, reportedly audible at nearly 2 km, cacophonous explosion of variable, harsh, raucous notes, often given as duet.



**Habitat.** Arid lowland scrub, including areas with sparse bushes (e.g. *Schinopsis marginata*) in generally barren areas, both in lowlands and in montane valleys; *Prosopis* woodland favoured in N portion of range. From sea-level to 2900 m.

**Food and Feeding.** Arthropods. Forages usually in pairs, but also frequently in small groups (possibly family parties). Mostly terrestrial. Gleans, probes and digs for arthropods on ground; occasionally digs into cactus stems.

**Breeding.** Season during austral spring-summer; eggs in Nov and Feb, and nestlings in Nov-Dec. Presumably monogamous. Nest a roughly spherical mass c. 40-120 cm long, 40-50 cm in diameter, main axis horizontal, structure strong enough to support a human standing on it without being damaged; of interwoven, often thorny sticks, entrance tube 35-45 cm long protruding from upper side near top and resting on horizontal branch, inner chamber 25-30 cm in diameter, lined with small twigs and grass; placed 1-3 m up in bush; new nest built each year but favoured locations reused, so that nests may accumulate over years. Clutch 3-5 eggs; young may remain with adults for up to 1 year, perhaps as nest helpers.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common. Evidently tolerant of fairly extensive anthropogenic habitat disturbance.

**Bibliography.** Anon. (2003d), Canevari *et al.* (1991), Chebez *et al.* (1999), Contreras (1977), Cory & Hellmayr (1925), Fraga & Narosky (1985), Griscom (1924), Hudson (1920), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olog (1958, 1959b, 1963a), de la Peña (1987, 1988), Ridgely & Tudor (1994), Salvador (1990), Stotz *et al.* (1996), Vuilleumier (1980a), Wetmore (1926), Zapata (1967).









*ssp lawrencii*

180

*ssp johnsoni*

*ssp boissonneautii*

181

♀

182

*ssp variegaticeps*

183

*ssp temporalis*

*ssp oberholseri*

185

186

*ssp anxia*

184

*ssp yungae*

*ssp mentalis*

187

*ssp lineata*

*ssp striaticollis*

*ssp rufosuperciliata*

188

*ssp cabanisi*

189

*ssp subalaris*

*ssp subulatus*

193

190

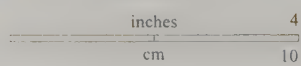
191

192

*ssp virgatus*

*ssp assimilis*

PLATE 25





## Reichenbach, 1853

*Pseudocolaptes lawrencii*

**French:** Anabate chamois

**Spanish:** Trepamusgos Barbablanca Panameño

**German:** Fahlwangen-Astspäher

**Other common names:** Lawrence's Tuftedcheek; Pacific Tuftedcheek (*johnsoni*)

**Taxonomy.** *Pseudocolaptes lawrencii* Ridgway, 1878, La Palma and Navarro, 3500-5000 feet [c. 1070-1520 m], Costa Rica.

Genus has no obvious close relatives; placement near *Berlepschia* based on bill shape and other morphological characters associated with climbing and probing, all possibly due to convergence; somewhat similar in general facial pattern and distinctive malar tufts to some *Cinclodes*, traditionally assumed to be distantly related. Forms a superspecies with *P. boissonneaultii* and sometimes treated, with some justification, as conspecific: in plumage colour, present species and race *auritus* of that species are in many ways more similar to each other than either is to nominate race of latter; in addition, verbal descriptions of voice equivocal, and formal comparison of sonagrams may provide data for re-evaluation of taxonomy. Race *johnsoni* considered a separate species by some authors, but evidence for this marginal, based mainly on its occurrence at lower elevation (a characteristic of Andean birds of W Colombia), minor plumage features, and near-parapatry with nominate in elevational distribution. Proposed race *panamensis*, described from single specimen from W Panama, considered not diagnosable, as characters (more olivaceous back with paler streaks, browner flanks) within range of variation of nominate. Two subspecies recognized.

### Subspecies and Distribution

*P. l. lawrencii* Ridgway, 1878 - mountains of Costa Rica S to C Panama (E to E Veraguas).

*P. l. johnsoni* Lönnberg & Rendahl, 1922 - W Andes of Colombia (S from Antioquia) and W Ecuador (S to El Oro).

**Descriptive notes.** 20–21 cm; 45–58 g. Large, richly coloured, strongly patterned furnarid with conspicuous pale tawny tuft at side of neck. Nominate race has buff-whitish supercilium, blackish-brown lores and auriculars, supraloral area grizzled dull buff; malar area to side of neck pale golden tawny, feathers flaring into neck to form conspicuous tuft, crown blackish-brown with dense pattern of fine buff streaks; hindcollar of broad pale buff streaks on blackish-brown background, fading into upper back, rest of back rufescent brown with faint blackish scalloping; rump and uppertail-coverts bright chestnut-rufous; wings mostly

blackish-brown, coverts tipped pale rufous and ochraceous buff; tail graduated, shafts stiffened basally, pointed at tips, colour as rump; throat whitish with golden-tawny wash, trace of blackish-brown flecking along lower border and malar; breast a mix of dark dull brown and pale buff forming pattern of broad blurred streaks, darkest at side, fading posteriorly; belly dull tawny-buff with some faint, irregular mottling, flanks rufescent brown, undertail-coverts ochraceous to cinnamon; iris dark brown to brown; upper mandible black to dark brown, lower mandible variable, usually paler with darker area in centre; tarsus and toes olive-green to yellowish-olive, possibly sometimes more pinkish-grey. Sexes alike in plumage, but female has significantly longer bill than male. Juvenile has nearly solid blackish-brown crown, blackish-brown scalloping on throat and breast, more rufescent flanks and belly, substantially shorter bill. Race *johnsoni* is more rufous above and below, and more heavily scalloped below, extending to belly, with darker markings. VOICE. Song (in Costa Rica) a series of sharp "wit" notes followed by clear trill that ends with several distinct louder notes; also described as 1-2 clear introductory notes followed by liquid, gurgling trill that ascends, then slows and descends, "peek, peek, prrrrrrrreeeee". Call a loud, metallic, ringing "sfink" or "pwik".

**Habitat.** Montane evergreen forest, usually open or at edge, often ranging into clearings with trees. At 1550-3000 m in Central America (nominate); mostly 900-1500 m, locally down to 700 m and up to 2000 m in Andes (*johnsoni*).

**Food and Feeding.** Mostly arthropods, occasionally small amphibians. Diet in Costa Rica consisted primarily of Dermaptera, cockroaches (Blattodea), Orthoptera, insect egg cases, spiders, and Coleoptera. Other recorded items are moths, Lepidoptera larvae, and salamanders (*Salamandra*). Forages singly or in pairs, often or in some cases usually in mixed-species flocks, from mid-storey to canopy. Primarily clambers along upper surfaces of branches and limbs. Epiphyte specialist. Probes for and gleans items from moss and epiphytes, occasionally dead leaves, and rummages noisily in clumps of debris; frequently uses tail for support; often nearly disappears into dense epiphytic growth or debris clumps.

**Breeding.** Season Jan-May, in Costa Rica, with eggs recorded in Apr and nestlings in May; nestlings in Apr and Jun in Colombia (*johnsoni*). Presumably monogamous. Nest of nominate c. 9 m above ground in natural cavity or old hole of woodpecker (Picidae), in decaying trunk, lined with bits of plant matter, especially brown tree-fern scales; nest of *johnsoni* also in old woodpecker hole in decaying trunk, 11.5 m above ground. Clutch 1 egg; at the only well-studied nest, of nominate, only one adult incubated and fed chick; at two nests of *johnsoni* both members of pair fed young; nestling period at least 29 days.

### Movements, Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common in most of Costa Rica; rare in W Panama; uncommon to rare in Ecuador, where race *johnsoni* considered vulnerable. Occurs in a number of protected areas, e.g. Río Nambí Natural Reserve, in Colombia.

**Bibliography.** Blake & Loiselle (2000), Cory & Hellmayer (1925), Cuervo *et al.* (2003), Granizo (2002), Hilty (1997), Hilty & Brown (1986), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely

& Tudor (1994), Ridgway (1911), Robbins & Ridgely (1990), Salaman (1994), Sillett (1994), Sillett *et al.* (1997), Skutch (1969c), Slud (1964), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Strewe (2001), Vaurie (1974), Wetmore (1972), Zimmer (1935b, 1936c).

*Pseudocolaptes boissonneautii*

**French:** Anabate de Boissonneau

**Spanish:** Trepamusgos Barbablanca Andino

**German:** Weißwangen-Astspäher

**Taxonomy.** *Anabates Boissonneautii* Lafresnaye, 1840, "Bogotá"

Genus has no obvious close relatives; placement near *Berlepschia* based on bill shape and other morphological characters associated with climbing and probing, all possibly due to convergence; somewhat similar in general facial pattern and distinctive malar tufts to some *Cinclodes*, traditionally assumed to be distantly related. Forms a superspecies with *P. lawrencii* and sometimes treated, with some justification, as conspecific; in plumage colour, race *auritus* and that species are in many ways more similar to each other than either is to nominate race of present species; in addition, verbal descriptions of voice equivocal, and formal comparison of sonagrams may provide data for re-evaluation of taxonomy. Proposed race *orientalis*, from Ecuador, is a synonym of *oberholseri*; *intermedius* possibly indistinguishable from latter, quantitative study needed. Proposed race *pallidus*, from NW Peru, described as paler below and having reduced back streaking, but these supposed characters do not distinguish it from nearby *medius*. In Peru, allocation of San Martin and La Libertad populations to *auritus* is tentative, and specimens from Ayacucho and Cuzco show signs of intermediacy in colour of malar tuft and rump between that race and *carabayae*; also, latter possibly shows trend towards increasing dark scalloping on belly and darker rump colour farther S, but larger samples needed. Eight subspecies recognized.

### Subspecies and Distribution

*P. b. meridae* Hartert & Goodson, 1917 - Perijá Mts and Andes of NW Venezuela (Trujillo, Mérida, Táchira) and NE Colombia (E Andes S to Bovacá).

*P. b. striaticeps* Hellmayr & Seilern, 1912 - coastal ranges of N Venezuela (Yaracuy, and Carabobo E to Miranda).

*P. b. boissonneautii* (Lafresnaye, 1840) - Andes of Colombia (W & C ranges, and E range S from Cundinamarca)

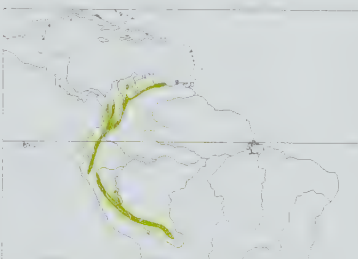
*P. b. oberholseri* Cory, 1919 - Andes of Ecuador (both slopes).

*P. b. intermedianus* Chapman, 1923 - Andes of NW Peru (Piura, NW Cajamarca).

*P. b. medius* Hellmayr, 1919 - N Peruvian Andes S of R Marañón (S Cajamarca, and Amazonas S to San Martín).

*P. b. auritus* (Tschudi, 1844) - Andes of C Peru (La Libertad S to N Puno).

*P. h. carabayae* J. T. Zimmer, 1936 - Andes from S Peru (S Puno) S to C Bolivia (E to W Santa Cruz).



**Descriptive notes.** 20–22 cm; 37–62 g. Large, strongly patterned furnarid with conspicuous pale tuft at neck side. Nominate race has buff whitish supercilium, blackish-brown lores and auriculars, supraloral area grizzled dull buff; malar area and side of neck pale golden tawny, feathers flaring into neck to form conspicuous tuft; malar area and side of neck almost pure white, feathers forming conspicuous tuft; crown blackish-brown with dense, fine buff streaks; hindneck and back blackish-brown with broad pale buff streaks, lower back rufescent brown, rump and uppertail-coverts brighter chestnut-rufous; wings mostly black-

ish-brown, coverts edged and tipped pale rufous, secondaries edged rufous at bases, tertials largely rufous; tail graduated, shafts stiffened basally, pointed at tips, bright rufous; throat white; breast pale golden buff, feathers margined dark brown, forming scaly pattern, fading posteriorly; rest of underparts rufescent, darkening posteriorly; iris brown to dark brown; upper mandible black, lower mandible greyish-white to silvery with blackish upper third; tarsus and toes grey to slate. Sexes alike, except that female has significantly longer bill. Juvenile has solid black crown, dense black scalloping on breast, darker belly and flanks almost entirely rich rufous, substantially shorter bill. Compared with nominate, race *striaticeps* has less scaling on breast, duller underparts, also described as having broader, darker crown streaks, deeper ochraceous and more pronounced supercilium, more cinnamon-coloured back with narrower spots lacking blackish margins; *meridae* has neck and breast feathers with little or no black fringing; *oberholseri* differs from nominate mainly in darker crown, heavier blackish fringing on neck and breast feathers; *intermedianus* is like previous, but evidently longer-billed, more heavily marked on back; *medius* differs from last two in having yellowish tinge on throat; *auritus* differs from previous only in having reduced sexual dimorphism, with female bill length reduced; *carabayae* differs from last in darker, blacker back, darker and more chestnut rump, malar tufts suffused with pale yellowish, flanks darker and browner (less rufescent), reduced sexual dimorphism in bill length, significantly smaller body size, perhaps also rump darker and belly more dark-scalloped towards S of range. VOICE. Song high-pitched for size of bird, 1-2 sharp "spik" notes followed by series of whistled tinkling "tsee" or "che" notes on same pitch, slightly accelerating, followed by dry, quavering trill, sometimes ending abruptly with distinct notes, "spik, spik, chechehechechechehechehechchch... dzzdzdzdzdzdzdzdzdz", can last up to 8 seconds. Contact call a loud, dry "chut" or "chink".

**Habitat.** Montane evergreen forest and elfin forest; mostly 1700–3200 m, locally down to 1450 m and up to 3500 m.

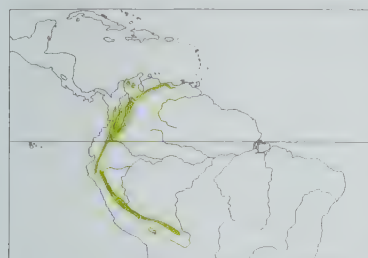
**Food and Feeding.** Recorded dietary items are Lepidoptera larvae and small frogs. Forages singly or in pairs, often or usually in mixed-species flocks, from mid-storey to canopy. In Bolivia high-elevation forest, mean foraging height was 8.5 m above ground and 4 m below top of canopy. Hitches along upper surfaces of horizontal and sloping branches, less frequently up vertical branches and trunks, mostly 5-20 cm in diameter. Epiphyte specialist. Probes for and gleans arthropods from bromeliads, moss and other epiphytic vegetation, occasionally also bark, dead leaves and green leaves; rummages noisily in debris caught in epiphytes, often using tail as a prop.

On following pages: 182. Point-tailed Palmcreeper (*Berlepschia rikeri*); 183. Scaly-throated Foliage-gleaner (*Anabacerthia variegaticeps*); 184. Montane Foliage-gleaner (*Anabacerthia striaticollis*); 185. White-browed Foliage-gleaner (*Anabacerthia amaurotis*); 186. Guttulated Foliage-gleaner (*Syndactyla guttulata*); 187. Lineated Foliage-gleaner (*Syndactyla subalaris*); 188. Buff-browed Foliage-gleaner (*Syndactyla rufosuperciliata*); 189. Rufous-necked Foliage-gleaner (*Syndactyla ruficollis*); 190. Peruvian Recurvebill (*Simoxenops ucayalae*); 191. Bolivian Recurvebill (*Simoxenops striatus*); 192. Chestnut-winged Hookbill (*Ancistrops strigilatus*); 193. Striped Woodhaunter (*Hylocisthes subulatus*).









dark brown; bill greyish-horn to olive-grey, sometimes darker along culmen, lower mandible sometimes paler; tarsus and toes olive to yellowish-brown. Sexes alike. Juvenile has darker crown, more prominent eyering and supercilium, is generally more rufous. Race *anxia* has eyering, postocular stripe, throat and breast more yellowish-buff, uppertail-coverts bright rufous like tail; *perijana* is paler, back more yellowish-brown, throat yellowish, underparts more yellowish-olive, less brown; *venezuelana* differs from previous in greyer crown and auriculars, browner back, bright rufous uppertail-coverts, whitish throat, more

greyish-brown breast and belly; *montana* is like nominate, but crown browner, contrasting less with back, back darker and more rufescent, tail darker, more chestnut, breast streaks more prominent, varies clinally, back redder in C Peru, specimens from Ayacucho more or less intermediate between this race and next; *yungae* is more reddish throughout, varies clinally, crown darker with faint dark spots (no streaks) and back darker red in Bolivia (Cochabamba) than in S Peru, specimens from La Paz intermediate. Voice. Song an accelerating, belaboured series of staccato, high-pitched, ticking, squeaky, dry "peck" or "chik" notes, roughly on same pitch, sometimes descending slightly at end, sometimes ending abruptly, duration c. 5 seconds. Call a high, squeaky, sharp "chit" or "chik"; also gives scratchy rattle.

**Habitat.** Montane evergreen forest; mostly 900-2300 m, locally to 2600 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs, usually in mixed-species flocks, from mid-storey to subcanopy. Clammers and hops along horizontal branches. Dead-leaf specialist. Gleans arthropods acrobatically from dead leaves, debris, epiphytes (including bromeliads), and mossy branches.

**Breeding.** Presumably monogamous. Two nests described, placed in broken off stump of *Bactris* palm or dead tree, lined with lichens and moss. Clutch 2 eggs. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common. Occurs in several protected areas, including Henri Pittier and Guaramacal National Parks, in Venezuela; fairly common in Machu Picchu Historical Sanctuary, in Peru.

**Bibliography.** Chapman (1926), Cory & Hellmayr (1925), Edwards & Lea (1955), Fjeldså & Krabbe (1990), Graves (1985), Hilty (1997, 2003a), Hilty & Brown (1983, 1986), Meyer de Schauensee (1952), Miller (1963), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Phelps & Phelps (1952), Remsen (2003a), Remsen & Parker (1984), Remsen & Traylor (1989), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salaman (1994), Schulenberg (2002), Sillett *et al.* (1997), Slud (1964), Stotz *et al.* (1996), Todd & Carriker (1922b), Whitney *et al.* (1994), Zimmer (1935a).

## 185. White-browed Foliage-gleaner

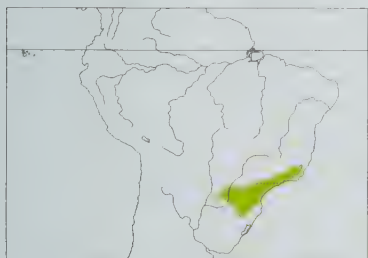
### *Anabacerthia amaurotis*

**French:** Anabate bridé **German:** Rahmbrauen-Blattspäher **Spanish:** Ticotico Cejiblanco

**Taxonomy.** *Anabates amaurotis* Temminck, 1823, Ypanema, São Paulo, Brazil.

Genus sometimes merged into a broadly defined *Philydor*. This species suspected by some authors as being not particularly closely related to either *A. variegaticeps* or *A. striatocollis*. Monotypic.

**Distribution.** SE Brazil (S Espírito Santo S to Santa Catarina, also C Rio Grande do Sul) and NE Argentina (Misiones); also several sight records from SE Paraguay (Canendiyú, Alto Paraná, Caazapá).



**Descriptive notes.** 15-16 cm. Medium-sized furnariid with conspicuous supercilium, diagnostic black and white crown patch, wedge-shaped bill. Has broad, sharply defined buff-white supercilium behind eye (a hint of this extending in front to bill base), well-defined dark brown postocular band and faint loreal spot, rest of face light buff with faint flecking and streaking, indistinct brown moustachial streak; crown brown with a splash of broadly blackish-margined whitish-based feathers (bases usually concealed) in centre of posterior crown, blackish margins also on hindcrown feathers; narrow, almost complete

collar formed by pale buff spotting that extends across neck side; back rich medium brown, becoming slightly paler on rump, rufous uppertail-coverts; wings rich medium brown, darker brown primary coverts; tail nearly square, shafts slightly stiffened basally, slightly pointed tips, distal 1 mm or so lacking barbs (possibly through wear), rufous; throat creamy whitish, blending to light brown breast with broad, blurred pale buff streaking, this fading posteriorly, belly light brown, flanks and undertail-coverts slightly darker, tinged rufescent; iris dark brown; bill pale horn with some pale grey, dusky base of culmen; tarsus and toes brownish-flesh to dull flesh-tinged olive. Sexes alike. Juvenile undescribed. Voice. Song a series of rough, staccato notes c. 2 seconds long, followed by 3-4 loud notes, "t-t-t-t-t-t-t-t", jrèék, jrèék, jrèék"; in Rio Grande do Sul (Brazil), terminal notes apparently missing. Contact call a high-pitched, insect-like "tsip" or "pseek" in slow series.

**Habitat.** Montane evergreen forest and tall second growth in heart of range in SE Brazil; also in hilly areas in lowlands in W and in nearby Argentina, apparently also E Paraguay. Mainly 600-1500 m, locally down to near sea-level.

**Food and Feeding.** Arthropods; Lepidoptera larvae recorded. Forages usually in mixed-species flocks, mainly in understorey, occasionally to subcanopy and ground. Acrobatically probes, pulls, gleans and pecks dead leaves, debris and branches; occasionally makes short sally-strikes.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Atlantic Forest Lowlands EBA. Rare to locally fairly common; definitely rare and local in low-elevation S portion of range. In Brazil, fairly common in Serra dos Órgãos National Park, rare in Itatiaia National Park; reported in San Rafael National Park, in Paraguay. Has relatively small range in which extensive deforestation has dramatically reduced its habitat. Agricultural expansion and urbanisation are major current threats.

**Bibliography.** dos Anjos & Boçon (1999), dos Anjos *et al.* (1997), Belton (1984), Canevari *et al.* (1991), Chebez *et al.* (1999), Cordeiro (2001), Cory & Hellmayr (1925), Lowen, Bartrina, Brooks *et al.* (1996), Madroño, Clay *et al.*

(1997), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olrog (1963a), Parker & Goerck (1997), Pearman (1994g), de la Peña (1988), Pinto (1978), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993, 1997), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Willis & Schuchmann (1993).

## Genus SYNDACTYLA Reichenbach, 1853

### 186. Guttulated Foliage-gleaner

#### *Syndactyla guttulata*

**French:** Anabate à gouttelettes **German:** Zimtbrauen-Blattspäher **Spanish:** Ticotico Goteado  
**Other common names:** Guttulated Leaf-gleaner

**Taxonomy.** *Anabazenops guttulatus* P. L. Slater, 1858, near Caracas, Venezuela.

Genus sometimes merged into *Philydor*; plumage, foraging behaviour and voice have suggested to some authors that it may be more closely related to *Thripadectes* than currently indicated in linear sequences. This species forms a superspecies with *S. subalaris*. Identity of population in Sierra de San Luis (Falcón) uncertain, presumed to belong with nominate race. Two subspecies recognized.

**Subspecies and Distribution.**

*S. g. guttulata* (P. L. Slater, 1858) - N Venezuela, in C Falcón (Sierra de San Luis) and coastal mountains (Yaracuy, Carabobo E to Distrito Federal, S Aragua).

*S. g. pallida* J. T. Zimmer & Phelps, Sr., 1944 - mountains of NE Venezuela (NE Anzoátegui, Sucre, N Monagas).



**Descriptive notes.** 17-19 cm; 34-38 g. Dark and heavily streaked furnariid with laterally compressed wedge-shaped bill (more so than congeners). Has faint supercilium dull ochraceous, becoming paler posteriorly, auriculars dark brown with narrow buff streaks, rest of face dark brown with small buff to ochraceous spots; top of head dark rufescent brown, paler rusty spots on forehead, fine rusty streaks on crown; back dark rufescent brown with blackish-margined broad rusty to whitish-buff streaks, rump and uppertail-coverts reddish-chestnut, wings mostly dark rufescent brown; tail graduated, rectrices with blunt tips, red-

dish-chestnut; throat yellowish, feathers of lower throat margined dark brown; breast and belly dark brown with conspicuous buffy streaks, fading on lower belly, undertail-coverts more rufescent; iris dark brown; upper mandible mostly dark grey to blackish, lower mandible pale horn-grey with darker grey upper base and central line; tarsus and toes olive-grey. Sexes alike. Juvenile undescribed. Race *pallida* described as like nominate but feather margins of upperparts paler, rump and tail paler rufous. Voice. Song a harsh, accelerating "cjak, cjak, czak czak-zak-zak-za-za-za", sometimes followed by a few more notes at end; call a harsh, rough "chak".

**Habitat.** Montane evergreen forest and secondary forest; 900-2100 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs, often in mixed-species flocks; occasionally follows army ants. In understorey, rarely to mid-storey, and mostly in dense undergrowth. Often hangs down acrobatically, and clings sideways on branches. Gleans and chisels arthropods from dead twigs, and branch tips, and flakes and pries bark and dead twigs; also gleans from dead leaves and bases of bromeliads.

**Breeding.** Presumably monogamous. A nest thought to have been of this species was in cavity in wall, filled with twigs, with entrance at bottom. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Caripae-Paria Region EBA and Cordillera de la Costa Central EBA. Uncommon to locally fairly common, and has small range. Occurs in Henri Pittier National Park.

**Bibliography.** Boesman (1998), Cory & Hellmayr (1925), Hilty (1999, 2003a), Renjifo *et al.* (1997), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Verea *et al.* (1999), Zimmer & Phelps (1944).

### 187. Lineated Foliage-gleaner

#### *Syndactyla subalaris*

**French:** Anabate vergeté **German:** Streifenblattspäher **Spanish:** Ticotico Rayado  
**Other common names:** Stripe-bellied Foliage-gleaner, Lineated Leaf-gleaner

**Taxonomy.** *Anabates subalaris* P. L. Slater, 1859, Pallatanga, Chimborazo, Ecuador.

Genus sometimes merged into *Philydor*; plumage, foraging behaviour and voice have suggested to some authors that it may be more closely related to *Thripadectes* than currently indicated in linear sequences. This species forms a superspecies with *S. guttulata*. Proposed race *colligata* from NW Peru said to have crown and back less fuscous brown (contrasting more with blackish collar) and chin darker yellow than *mentalis*, but description based on only 3 specimens, and characters mentioned are highly individually variable; proposed race *ruficrissa* from C Peru supposedly with back blacker, rump and uppertail-coverts more rufescent and throat patch more restricted, but these characters also highly variable and do not permit diagnosis of individual specimens (although lack of distinctive features rather surprising, given major biogeographical barrier separating this population from those of N Andes). Six subspecies recognized.

**Subspecies and Distribution.**

*S. s. lineata* (Lawrence, 1865) - mountains of Costa Rica and W Panama (E to Veraguas).

*S. s. tacarcunae* (Chapman, 1923) - cerros Mali, Pirre and Tacarcuna, in extreme E Panama and NW Colombia.

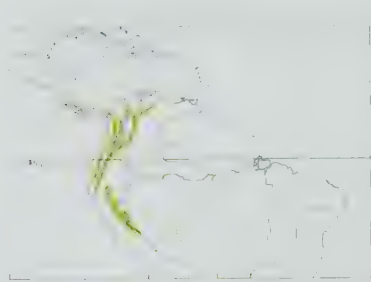
*S. s. subalaris* (P. L. Slater, 1859) - Andes of W Colombia (W range, W slope of C range) and W Ecuador (S to El Oro).

*S. s. striolata* (Todd, 1913) - E Andes in NW Venezuela (Lara, Barinas) and Colombia (Magdalena S to Meta and Huila, and Serranía San Lucas).

*S. s. olivacea* Phelps, Sr. & Phelps, Jr., 1956 - SW Táchira (Chiquito Valley), in W Venezuela.

*S. s. mentalis* (Taczanowski & Berlepsch, 1885) - E slope of Andes in Ecuador and Peru (S to Cuzco).





blurry brownish streaking; breast dark brown with conspicuous buff streaks, blending to slightly paler brown belly and flanks with narrower streaks that almost disappear posteriorly; undertail-coverts with broader, more ochraceous streaks; iris brown to dark brown; upper mandible dark brown to black, lower mandible variable, from greyish-horn to yellowish-grey to ivory, sometimes darker central area; tarsus and toes olive-green to greenish-grey. Sexes alike. Juvenile is brighter generally, crown blacker with narrow cinnamon streaks, back more reddish-brown, black malar stripe with dull white spots, chin speckled black, supercilium, neck and breast more ochraceous cinnamon, sides and flanks richer brown, undertail-coverts cinnamon-brown, also shorter bill. Race *lineata* is like nominate, but back slightly paler, more rufescent, throat more buffy yellow and heavily marked, underparts slightly more olivaceous with narrower, more sharply defined streaks; *tacarcumae* is like previous, but has darker, more olive-brown back, greyer underparts, paler and more yellowish throat, *striolata* is evidently like nominate, but crown slightly darker, less rufescent, and more conspicuously streaked buff, back streaks broader, wings less rufescent, throat paler and less buffy, streaks below broader and extend farther into belly; *olivacea* is the most olivaceous below, also differs from last in having back and crown darker, more blackish-brown; *mentalis* is like nominate but crown usually blacker, crown and nape with more conspicuous streaking, supercilium less distinct, throat darker and more buffy yellow, underparts more strongly streaked and slightly more rufescent. Voice. Song a fast, accelerating series of 6-10 dry, harsh, scratchy, nasal notes described as "djit", "anh" or "ki", sometimes ascending and then descending, sometimes accelerating and then decelerating, ending abruptly, "bzert, bzert, jzut, jzut-ji-ji-ji". Call described as a dry, very harsh "tzuk", "tcheck", "skanh", "jert" or "kr-rk", sometimes repeated.

**Habitat.** Montane evergreen forest, especially along streams and treefalls, where undergrowth particularly dense; mostly 1000-2300 m, locally down to 600 m.

**Food and Feeding.** Mostly arthropods, occasionally small vertebrates; reported dietary items are Coleoptera, Orthoptera including crickets (Gryllidae), cockroaches (Blattodea), spiders, also small frogs and lizards. Forages singly or in pairs, sometimes to usually in mixed-species flocks, from understorey to midstorey. Gleans and probes for items on dead leaves, moss, bark, debris, epiphytes and foliage, usually by climbing along large branches and vines; often hangs down to reach sides and undersides of branches.

**Breeding.** Fledgling found in Dec in NW Ecuador. Presumably monogamous. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout range. Occurs in several protected areas, e.g. La Planada Nature Reserve, in Colombia.

**Bibliography.** Anon. (1998a), Bond (1945), Chapman (1926), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Graves (1985), Hernández *et al.* (1995), Hilty (1997, 2003a), Hilty & Brown (1983, 1986), Miller (1963), Parker & Carr (1992), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Phelps & Phelps (1956), Powell (1980), Pratt (1992), Remsen (1981, 1984a, 1984b, 1985, 2003a), Remsen & Parker (1983, 1984), Ridgely & Tudor (1994), Ridgway (1909), Robbins *et al.* (1985), Salaman (1994), Salaman, Donegan & Cuervo (1999, 2002), Schulenberg *et al.* (2001), Slud (1964), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Wetmore (1972), Zimmer (1935a).

## 188. Buff-browed Foliage-gleaner

### *Syndactyla rufosuperciliata*

**French:** Anabate à sourcils fauves **German:** Ockerbrauen-Blattspäher **Spanish:** Ticotico Cejudo

**Taxonomy.** *Xenops rufosuperciliatus* Lafresnaye, 1832, Rio de Janeiro, Brazil.

Genus sometimes merged into *Philydor*; plumage, foraging behaviour and voice have suggested to some authors that it may be more closely related to *Thripadectes* than currently indicated in linear sequences. The taxon *S. mirandae*, described from C Brazil (Goias) and subsequently treated as a race of present species, is in fact a synonym of *Philydor dimidiatum*. Proposed race *squamiger*, described from SE Brazil (Paraná), considered a synonym of nominate race by subsequent authors; proposed race *similis*, from NW Peru, described as like *cabanisi* but more olivaceous (less rufescent) above, and paler and much less heavily marked below, but these differences not apparent in specimens from within a few km of type locality. Four subspecies recognized.

#### Subspecies and Distribution

*S. r. cabanisi* (Taczanowski, 1875) - Andes of S Ecuador (Cordillera del Cóndor, in Zamora-Chinchipe), Peru (Piura, Cajamarca and S from Amazonas) and W Bolivia (S to Cochabamba).

*S. r. oleaginea* (P. L. Slater, 1884) - Andes from C Bolivia (S from W Santa Cruz) S to NW Argentina (S to La Rioja).

*S. r. rufosuperciliata* (Lafresnaye, 1832) - SE Brazil (S Minas Gerais and S Espírito Santo S to Paraná).

*S. r. acrita* (Oberholser, 1901) - NC Paraguay and extreme SE Brazil (Santa Catarina, Rio Grande do Sul) S to NE Argentina (Chaco and Misiones S to NE Santa Fé and N Buenos Aires) and Uruguay.

**Descriptive notes.** 17-18 cm; 22-33 g. Nominative race has tawny-buff eyering contiguous with paler supercilium that extends, broken, posteriorly to nape, hint of supercilium in front of eye; rest of face brownish with irregular buff markings; crown dull olive-brown, hint of whitish shaft streaks on centre of rear crown, faint collar of pale spotting; back to uppartail-coverts olive-brown; wings mostly rich olivaceous brown; tail graduated, shafts slightly stiffened basally, slightly pointed tips, distal 1-2 mm without barbs (may vanish with wear), dull rufous; throat whitish, some feathers with narrow but distinct brownish tips;

breast buffy whitish, with olive-brownish feather margins producing scalloped look; belly olive-brownish with broad, blurred buffy-whitish streaks, fading posteriorly; flanks slightly darker, less streaked, undertail-coverts with broader streaks, tinged ochraceous; iris brown to dark brown; upper mandible brown to dark grey to black, lower mandible whitish to blue-grey; tarsus and toes olive to brownish-grey. Sexes alike. Juvenile described as spotted rather than streaked below. Race *acrita* is like nominate, but browner, more olivaceous (less rufescent) above, tail darker, more chestnut, underparts darker and more olivaceous, belly streaking more prominent, supercilium slightly paler; *oleaginea* differs from nominate in having brown of underparts more olivaceous, streaks below narrower and more elongated; *cabanisi* has crown darker, supercilium richer ochraceous, back slightly darker richer brown, uppartail-coverts suffused with chestnut, tail slightly darker, more chestnut, wings warmer brown with chestnut tinge on coverts and secondaries, throat more buff-tinged, brown of underparts darker, richer, more ochraceous, streaking more tawny-buff, juvenile described as having darker upperparts and darker feather margins below than adult, another (of "*similis*") as having paler, greyer upperparts, paler supercilium, more sharply defined feather margins below. Voice. Song a loud, fast, accelerating series, "kuh-kuh-kuh-kihikihikihikikikku", starting faintly and ascending, then louder and quavering or descending, variable in length, c. 1.5-2.5 seconds; at least superficially similar throughout range. Call described as "kssr", alarm as sharp "set" or "setet".

**Habitat.** In Andes, montane evergreen forest and second growth, often with *Chusquea* bamboo; mostly 1300-2500 m, locally to 1000 m in C Bolivia. In SE part of range (nominate race, *acrita*), tropical lowland evergreen forest, gallery forest and secondary forest, to 2000 m.

**Food and Feeding.** Arthropods; tent caterpillars recorded. Forages singly or in pairs, sometimes (Andes) to possibly usually (lowlands) in mixed-species flocks; primarily in undergrowth, but ranges to subcanopy and occasionally even down to ground. Gleans items from branches, dead leaves and other debris, and epiphytes; occasionally hammers branches.

**Breeding.** Eggs in Nov in NW Argentina, nestlings in Nov in SE Brazil and fledgling in Aug in S Peru. Presumably monogamous. Three nest-sites documented, in hole 5 m up in rotting branch, 2-7 m up in hole in wall of building, and c. 2 m up in vertical pipe 11 cm in diameter; also reported to use old hole of woodpecker (Picidae); one nest described, a shallow cup made of small twigs. Clutch 2-4 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common in most of its range; rare in Paraguay and N Peru. Occurs in numerous protected areas, including Ybicui National Park, in Paraguay, Aparados da Serra National Park and Serra do Mar State Park, in Brazil, and Calilegua National Park and Urugua-í and La Araucaria Provincial Parks, in Argentina.

**Bibliography.** dos Anjos & Boçon (1999), dos Anjos *et al.* (1997), Belton (1984), Bond (1945), Brooks *et al.* (1993), Canevari *et al.* (1991), Chapman (1927), Chebez *et al.* (1999), Cory & Hellmayr (1925), Cuello (1985), Di Giacomo & López (1998), Ferreira de Vasconcelos & Melo-Júnior (2001), Fiora (1933), Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), Fraga & Narosky (1985), Goerck (1999a), Graves (1985), Hayes (1995), Hayes & Scharf (1995a), Herzog *et al.* (1997), Krabbe & Sornoza (1994), Madroño, Robbins & Zyskowski (1997), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Norez & Cerana (1990), Novaes (1953), Olrog (1963a), Parker & Goerck (1997), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Pearman (1994c), de la Peña (1988), Pereyra (1938), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salvador (1988, 1990), Schulenberg *et al.* (2001), Scott & Brooke (1985), Short (1975), Sick (1993, 1997), Stotz *et al.* (1996), Taczanowski (1884), Wetmore (1926), Willis (1992b), Zimmer (1935a).

## 189. Rufous-necked Foliage-gleaner

### *Syndactyla ruficollis*

**French:** Anabate à cou roux **German:** Rosthals-Baumspäher **Spanish:** Ticotico Cuellirrufo

**Taxonomy.** *Anabazenops ruficollis* Taczanowski, 1884, Paucal (= Nanchu), Cajamarca, Peru.

Genus sometimes merged into *Philydor*; plumage, foraging behaviour and voice have suggested to some authors that it may be more closely related to *Thripadectes* than is indicated in linear sequences. Tentative inclusion of this species in current genus based largely on vocal characteristics; formerly placed in *Automolus*, but voice and plumage unlike any species in that genus. Proposed race *celicae*, from SW Ecuador, described as brighter, paler and more ochraceous, especially on upperparts, and has ochraceous supercilium and broader breast streaks; these features, however, can be found throughout species' range and may be due to differences in age and plumage wear. Monotypic.

**Distribution.** Coastal hills and W slope of Andes in SW Ecuador (Loja) and NW Peru (Tumbes S to Lambayeque).



**Descriptive notes.** 18-19 cm; 29-39 g. Fairly large furnarid; unlike in others of genus, bill not obviously wedge-shaped. Conspicuous orange-rufous supercilium extends posteriorly to nape, faintly in front of bill base; postocular band dark brownish, auriculars and lores grizzled greyish, dark brownish and buff, moustachial area orange-rufous to ochraceous buff, often scaled dark brown; crown dark rufescent brown; indistinct collar of vague rufous streaking and spotting; back rich rusty brown, rump redder, uppartail-coverts bright chestnut; wings mainly rich rusty brown, slightly darker primary coverts; tail slightly graduated,

shafts slightly stiffened basally, slightly pointed tips, distal 1 mm of shaft without barbs (possibly worn off), dark chestnut; chin pale tawny-ochraceous, blending to more intensely ochraceous lower throat; olivaceous brown breast with broad, blurry pale rufescent buff streaking, this fading posteriorly; belly medium olivaceous brown, flanks darker, tinged rufescent, undertail-coverts dark rufous; iris brown; upper mandible dark brown to blackish, lower mandible pale brownish or pale greyish; tarsus and toes greyish-olive or olive-greenish. Sexes alike. Juvenile is duller throughout, crown more dusky, less brownish, some dark brown edging on throat feathers. Voice. Song a harsh, nasal "chick, chick, che-che, ttrrrrr", 2-3 seconds long, final note downward-inflected, pattern similar to that of *S. rufosuperciliata* song; contact call described as sharp, nasal "ank" or "chech".

**Habitat.** Montane evergreen forest and tropical deciduous forest; often in bamboo, shaded ravines, along streams; also second growth. Mainly 1000-2625 m, occasionally down to 400 m and up to 2900 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs, often in mixed-species flocks; during dry season also in small groups and almost always in mixed flocks. Mostly from understorey to mid-



storey. Hitches along horizontal limbs and trunks. Gleans and probes for arthropods in moss, bases of bromeliads, sheaths on bamboo stems, ferns, and debris; occasionally searches leaf litter on ground. **Breeding.** Breeds probably during Jan-May wet season. Nest not described. No further information. **Movements.** Resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Tumbesian Region EBA. Common in El Tundo Nature Reserve, in S Loja, Ecuador; uncommon to fairly common in Tumbes National Reserve, in Peru, in which country is present also in protected Chĩnama Forest (Lambayeque). Population estimated at more than 10,000 individuals; declining strongly as a result of habitat destruction. Much forest within its small range already lost, and clearance of low-land forest continuing at fast rate; habitat loss at higher elevations less severe, but still a threat. Evidently tolerant of at least moderate forest degradation.

**Bibliography.** Best & Clarke (1991), Best & Kessler (1995), Best, Clarke *et al.* (1993), Bloch *et al.* (1991), Chapman (1921a, 1926), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cook (1996), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Parker, Parker & Plenge (1982), Parker, Schulenberg, Graves & Braun (1985), Parker, Schulenberg, Kessler & Wust (1995), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Sillett *et al.* (1997), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Walker (2002), Wege & Long (1995), Wiedenfeld *et al.* (1985), Williams & Tobias (1994), Zimmer (1935a).

## Genus *SIMOXENOPS* Chapman, 1937

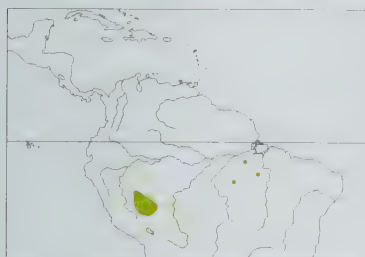
### 190. Peruvian Recurvebill

#### *Simoxenops ucayalae*

**French:** Anabate à bec retroussé **Spanish:** Ticotico Picolezna Peruano  
**German:** Starkschnabel-Blattsphäher  
**Other common names:** Peruvian Foliage-gleaner

**Taxonomy.** *Anachilus ucayalae* Chapman, 1928, Lagarto, upper Río Ucayali, Peru. Genus merged by some authors into a broad *Philydor*; close relationship to *Syndactyla* suggested by vocalizations and general behaviour. May form a superspecies with *S. striatus*. Described taxon *Megaxenops ferruginea* is a synonym of present species. Monotypic.

**Distribution.** Amazonian SE Peru (S Ucayali, Cuzco, Madre de Dios) and N Bolivia (W Pando); also S Amazonian Brazil (Acre, N Mato Grosso, Pará).



**Descriptive notes.** 19–20 cm; 39–55 g. Fairly large, dark rufous furnariid with conspicuously heavy, wedge-shaped bill, disproportionately large toenails. Has narrow, inconspicuous rufous supercilium; lores and auriculars grizzled and flammulated greyish, brownish and dark buff; malar area reddish-rufous; crown dark reddish-brown, faint shaft spotting on forehead; upperparts reddish-brown, hint of more reddish collar; wings mostly dark reddish-brown, bend of wing dark ochraceous; tail rounded, shafts slightly stiffened basally, slightly pointed tips with 1 mm of shaft without barbs (or barbs worn off), dark reddish-

chestnut; throat orange-rufous, faint paler shaft streaks on lower throat; breast orange-rufous with faint paler shaft streaks, belly slightly duller with barely a trace of streaks, flanks and undertail-coverts darker; iris brown to dark brown; upper mandible greyish-brown to greyish-brown, lower mandible grey to silvery bluish; tarsus and toes olive to olive-green. Sexes alike. Juvenile has darker crown with dark rufescent spots, slightly darker and less rufescent back, more conspicuous brighter supercilium, whitish lores, reddish rufescent spots on side of neck, paler underparts with blackish feathers edges producing strongly scalloped pattern. **Voice.** Song a distinctive, ascending, accelerating series of peculiar low, harsh, chattering nasal notes, lasts 3–5 seconds, recalls songs of *Syndactyla*; call a loud, hoarse, irritated, low-pitched “chack”.

**Habitat.** Tropical lowland evergreen forest and river-edge forest, primarily in or near *Guadua* bamboo thickets in floodplain forest; locally *Gynerium* cane thickets along rivers. To 1300 m.

**Food and Feeding.** Recorded dietary items are spiders, larval Coleoptera, Dermaptera. Forages singly or in pairs, occasionally in mixed-species flocks; in dense undergrowth, occasionally to mid-storey. Rapidly hitches up vertical and inclined stems, with tail crosswise to branch. Searches bamboo and cane stalks, often dead ones, as well as woody vines and *Heliconia* stalks; hammers, excavates, flakes and gleans for food items. Occasionally gleans and pulls at dead leaves. In study in SE Peru, more than 95% of all observed foraging attempts were directed at *Guadua* bamboo stems, with the rest directed at dead leaves and branches of plants other than bamboo.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Rare to locally uncommon. Global population size almost certainly small because of generally patchy distribution of its habitat. Highly fragmented range; conservation status of isolated populations in Brazil poorly known. Occurs in Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru; population in that country suggested by one author as c. 2000 pairs. Habitat within main range in Peru and Bolivia relatively intact, but development of region, with road-building and settlement, a threat. Appears reasonably tolerant of selective logging.

**Bibliography.** Aleixo *et al.* (2000), Alonso *et al.* (2001), Angehr & Aucca (1997), Foster *et al.* (1994), Graves & Zusi (1990), Kratter & Parker (1997), Mayr & Vuilleumier (1983), Novas (1978), Parker (1982), Parker & Remsen (1987), Parker, Parker & Plenge (1982), Parker, Stotz & Fitzpatrick (1997), Remsen (2003a), Remsen & Parker (1983), Remsen & Robinson (1990), Remsen & Traylor (1989), Ridgely & Tudor (1994), Schulenberg *et al.* (2000), Servat & Pearson (1991), Sick (1993, 1997), Stotz *et al.* (1996), Terborgh *et al.* (1984), Vaurie (1971b), Whitney (1997), Whittaker & Oren (1999), Zimmer *et al.* (1997).

### 191. Bolivian Recurvebill

#### *Simoxenops striatus*

**French:** Anabate de Bolivie **Spanish:** Ticotico Picolezna Boliviano  
**German:** Ockerstrichel-Blattsphäher

**Other common names:** Bolivian Foliage-gleaner

**Taxonomy.** *Anachilus striatus* Carriker, 1935, Santa Ana, 2200 feet [670 m], Río Coroico, La Paz, Bolivia.

Genus merged by some authors into a broad *Philydor*; close relationship to *Syndactyla* suggested by vocalizations and general behaviour. May form a superspecies with *S. ucayalae*. Monotypic.

**Distribution.** Andean foothills of W & C Bolivia (La Paz, Cochabamba, W Santa Cruz).



**Descriptive notes.** 19–20 cm. Fairly large, dark rufous furnariid with streaking both above and below. Has face mostly grizzled and flammulated brownish and rufous; crown and back rich dark reddish-brown with conspicuous dark buff streaks, narrower on crown than on back; rump slightly paler and nearly unstreaked, uppertail-coverts dark chestnut; wings mainly rich dark reddish-brown, bend of wing ochraceous; tail slightly rounded, shafts slightly stiffened basally, slightly pointed tips, distal 1 mm lacking barbs (or barbs worn off), dull chestnut; malar area and throat orange-rufous, faint paler shaft spotting along lower

margin of throat; breast and upper belly with blurred, irregular streaks of orange-rufous and brown, these virtually disappearing on rich brown lower belly; undertail-coverts more chestnut, with ochraceous shaft streaking; iris dark; bill grey; tarsus and toes greyish. Sexes alike. Juvenile not described, but a museum specimen with dark scalloping on upper breast and lower throat (similar to pattern of juvenile *S. ucayalae*) may represent this plumage. **Voice.** Song a harsh, staccato, rattling, ascending series that levels in pitch and then ends abruptly, c. 3 seconds long, similar to that of *S. ucayalae*; call a raspy “chet” and nasal, scolding “naah”.

**Habitat.** Humid foothill and lower montane forest; 650–900 m.

**Food and Feeding.** Arthropods. Regularly in mixed-species flocks, foraging mainly in dense undergrowth, occasionally ranging into subcanopy. Gleans, pecks and probes on dead branches, debris, and epiphytes. Relatively smaller bill than that of *S. ucayalae* suggests that it does proportionately less hammering and chiselling of stems and branches than does that species.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Bolivian and Peruvian Lower Yungas EBA. Rare; known from few localities, and few specimens. Present in Pilon Lajas Biosphere Reserve, in La Paz, Carrasco National Park, in Cochabamba, and Amoró National Park, in Santa Cruz. In last of those, at least 4 birds found in area of 0.5 km<sup>2</sup> in early 1990s and total numbers in park suggested as being reasonably good. Global population estimated at 2500–10,000 individuals; declining as a result of habitat destruction. Forest in its narrow elevational range is under intense pressure from agricultural expansion and conversion, and much of its range has been deforested; encroachment by settlers into protected areas a major problem. Effective protection of habitat considered a conservation priority.

**Bibliography.** Bond & Meyer de Schauensee (1941, 1942, 1943), Carriker (1935a), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Parker (1982), Parker *et al.* (1992), Remsen & Parker (1995), Remsen & Traylor (1989), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wege & Long (1995), Whitney *et al.* (1994).

## Genus *ANCISTROPS* P. L. Sclater, 1862

### 192. Chestnut-winged Hookbill

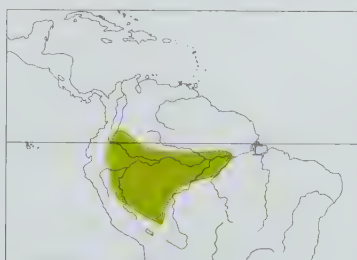
#### *Ancistrops strigilatus*

**French:** Anabate à bec crochu **Spanish:** Ticotico Picoganchito  
**German:** Hakenschnabel-Blattsphäher  
**Other common names:** Spix's Hookbill

**Taxonomy.** *Thamnophilus strigilatus* Spix, 1825, no locality given = Río Solimões, Brazil.

Plumage and distribution suggest that closest relative of genus is *Philydor*. Proposed race *cognitus*, from lower R Tapajós (Brazil), described as more ochraceous and paler above, more buffy below, particularly throat, which has fewer dusky spots, with supercilium more buff; these characters, however, bridged by individual variation in series from farther W. Monotypic.

**Distribution.** SE Colombia (S from S Meta and W Vaupés), E Ecuador, E Peru, Amazonian Brazil (mostly S of R Amazon, E to lower R Tapajós) and N Bolivia (Pando, La Paz).



**Descriptive notes.** 17–18 cm; 30–39 g. Rather distinctive furnariid, with strongly hooked bill like that of an antshrike (*Thamnophilus*). Has broad whitish to buff supercilium; lores grizzled brownish and buff, auriculars brown with buff-whitish streaks; crown very dark brown with narrow but conspicuous golden-buff streaks; back like crown but somewhat paler and more greyish-olive (variable), streaks paler and not quite so sharply defined, rump and uppertail-coverts lighter brown with fainter streaks; wing-coverts mostly dull chestnut with pale shafts, remiges with dull chestnut outer webs, dark fuscous inner webs and tips; tail

nearly square, bright rufous; malar area yellowish-buff, becoming mottled posteriorly, throat pale yellowish-buff with faint dull brownish flecking; breast dull yellowish-buff with blurry dull brownish streaks, these fading into faintly streaked belly; flanks dull brownish with yellowish-buff streaking, undertail-coverts mottled dull buff and light brownish; iris brown; upper mandible blackish to dark horn, lower mandible blue-grey to bluish-ivory; tarsus and toes yellowish-brown to pale brownish-olive. Sexes alike. Juvenile has less regular streaks on upperparts, darker and narrower streaking on underparts. **Voice.** Song a fast, ascending trill that increases in loudness as it levels off in pitch, then ends abruptly; also described as nasal, “tyew-tyew”, often followed by or interspersed with bouts of chattering, in all lasting 5–10 seconds or more; also prolonged, sometimes quavering



trill up to 30 seconds or more. Call a harsh, buzzing “bzzt”; short, ascending trill (similar to song of *Philydor ruficaudatus*) also described.

**Habitat.** Tropical lowland evergreen forest, mostly *terra firme*, locally in *várzea*; mostly below 500 m, locally to 900 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs, usually in mixed-species flocks. Moves slowly along large branches and within dense vine tangles, usually in upper storey. Gleans food items, but substrate use not well known; in study in SE Peru, 32% of foraging manoeuvrers were directed at dead leaves.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally common. Occurs in many protected areas, including Amacayacu National Park, in Colombia, Cuyabeno Reserve, in Ecuador, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, and Cristalino State Park, in Brazil.

**Bibliography.** Angehr & Aucca (1997), Cadena, Álvarez *et al.* (2000), Cory & Hellmayr (1925), Foster *et al.* (1994), Gyldenstolpe (1945a, 1951), Hilty & Brown (1986), Munn (1985), Oren & Parker (1997), Parker & Bailey (1991), Parker *et al.* (1982), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Rosenberg (1997), Salaman *et al.* (1999), Schulenberg & Remsen (1982), Schulenberg *et al.* (2001), Sick (1993, 1997), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh *et al.* (1984), Zimmer, J.T. (1930), Zimmer, K.J. *et al.* (1997).

## Genus *HYLOCTISTES* Ridgway, 1909

### 193. Striped Woodhaunter

#### *Hyloctistes subulatus*

**French:** Anabate forestier    **German:** Strichelrücken-Waldspäher    **Spanish:** Ticotico Listado  
**Other common names:** Striped Foliage-gleaner, Striped Leaf-gleaner; Western Woodhaunter (races N & W of Andes); Eastern Woodhaunter (races E of Andes)

**Taxonomy.** *Sphenura subulata* Spix, 1824, Amazon River.

Included in genus *Philydor* by some authors. Vocal differences accompanied by marked plumage differences between trans-Andean and cis-Andean populations indicate that two species are almost certainly involved. Six subspecies recognized.

**Subspecies and Distribution.**

*H. s. nicaraguae* A. H. Miller & Griscom, 1925 - E Nicaragua.

*H. s. virgatus* (Lawrence, 1867) - Costa Rica and W Panama (E to Veraguas).

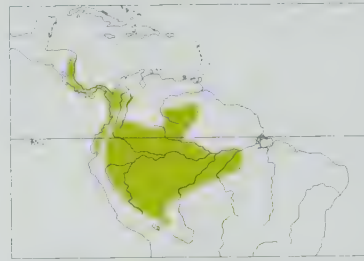
*H. s. assimilis* (Berlepsch & Taczanowski, 1884) - E Panama (W from E Colon) and W Colombia S to W Ecuador (S to NW Azuay and El Oro).

*H. s. cordobae* Meyer de Schauensee, 1960 - NW Colombia (Antioquia, S Córdoba, and S in Magdalena Valley to Boyacá).

*H. s. subulatus* (Spix, 1824) - S Venezuela (Amazonas, S Bolívar), SE Colombia (S from S Meta and Vaupés), E Ecuador, E Peru, Amazonian Brazil (E to R Negro and, S of Amazon, to Pará) and N Bolivia (S to La Paz and Beni).

*H. s. lemae* Phelps, Sr. & Phelps, Jr., 1960 - SE Venezuela (Sierra de Lema, in SE Bolívar).

**Descriptive notes.** 17–18 cm; 24–35 g. Distinctive furnariid, with plumage pattern and bill shape reminiscent of *Xiphorhynchus* woodcreepers. N nominate race has face mostly dark brownish with golden-buff streaking, narrow pale eyering and line behind eye, lores grizzled brownish and buff; crown dark brownish, golden-buff shaft streaks and oblong spots on forehead elongating into streaks on crown, these becoming still longer and broadening on rich dark brown back, but less distinct posteriorly; lower back becoming chestnut with hint of streaks, uppertail-coverts chestnut; wings mainly rufescent brown; tail rounded, shafts slightly stiffened basally, blunt tips, chestnut; chin



light buff-brown, faintly streaked darker, streaks becoming more prominent on lower throat; breast dull medium brown with broad blurred golden-buff streaks, fading posteriorly, belly rich tawny-brown, flanks darker brown; iris brown to dark brown; upper mandible dark grey to brown to fuscous horn, lower mandible often slightly paler; tarsus and toes fuscous brown to olive-grey to grey-brown. Sexes alike. Juvenile has less distinct pattern of streaking, slightly paler underparts, some mottling on throat. Race *lemae* differs from nominate in having crown and underparts more distinctly streaked, back and underparts more

olivaceous, less brownish, chin more yellowish, less buffy; *assimilis* is darker than previous, more rufescent above, less streaked above (little on crown), with rump and tail darker, underparts darker, more olivaceous (less tawny) and less streaked; *cordobae* is like previous, but throat and face paler and more yellowish, breast and back paler and more olive, dusky edges of crown feathers more contrasting, bill longer, also described as differing from next in more uniformly coloured upperparts lacking streaks on back and reduced streaking on breast; *virgatus* has rump darker, more chestnut, streaks on crown restricted to a few feathers, narrow streaks on upper back, underparts more olivaceous; *nicaraguae* described as darker, blacker-backed than last, back more heavily streaked, more heavily streaked below, especially on lower throat and breast, with flanks more olive, less rufescent. **Voice.** Song N & W of Andes described as a series of variable duration of loud, sharp nasal notes, “kip, yip-yip-yip-yip-yip”, or of “keeu” or “kick” notes, evenly pitched and spaced; E of Andes 2 (occasionally up to 4) loud whistled “tyew” or “tseew” notes followed by softer, low-pitched rattling “tr-r-r-r-r-r”, or sometimes just series of 2–5 “tseew” notes. Call note of both groups similar, a sharp raspy “chook”, “squirk” or “squirt”; dry chattered “zeck-zeck-zeck” also described from Costa Rica.

**Habitat.** Flooded tropical evergreen forest, including *terra firme* and *várzea*, and tall second growth; locally occurs in lower montane evergreen forest. Recorded mostly below 1100 m, but locally up to 1700 m.

**Food and Feeding.** Diet primarily Orthoptera, Coleoptera and spiders; Heteroptera and small lizards and frogs also recorded. Generally forages singly, regularly to usually in mixed-species flocks; in understorey and mid-storey, occasionally to subcanopy. Gleans and probes for arthropods in debris, dead leaves, epiphytes, including bromeliads and aroids (Araceae), palm fronds, and dense vegetation, often by “burrowing” in; often searches along major branches and vines, and near trunk. In Costa Rica and at two sites in SE Peru, 70%, 63% and 85%, respectively, of observed foraging manoeuvres were directed at dead leaves.

**Breeding.** Nestlings in Feb in Colombia. Presumably monogamous. One nest described, a shallow pad of rachides of compound leaves placed at end of tunnel in dirt bank; estimated territory size 12 ha in transitional forest in SE Peru. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally common. Densities of 4–7/km<sup>2</sup> in transitional forest in SE Peru. Occurs in many protected areas, e.g. Corcovado National Park, in Costa Rica, Cueva de los Guácharos National Park and Río Nambi Natural Reserve, in Colombia, Cuyabeno Reserve and Río Palenque Science Centre, in Ecuador, and Tambopata-Candamo Reserved Zone, in Peru.

**Bibliography.** Angehr & Aucca (1997), Borges *et al.* (2001), Burton (1975), Cadena, Álvarez *et al.* (2000), Chapman (1926), Cory & Hellmayr (1925), Foster *et al.* (1994), Hilty (2003a), Hilty & Brown (1986), Meyer de Schauensee (1960), Munn (1985), Munn & Terborgh (1979), Oren & Parker (1997), Parker & Bailey (1991), Parker & Carr (1992), Parker *et al.* (1982), Phelps & Phelps (1960), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Robinson *et al.* (1990), Rodner *et al.* (2000), Rosenberg (1997), Salaman (1994), Salaman, Donegan & Cuervo (2002), Schmitt & Schmitt (1987), Schulenberg & Remsen (1982), Schulenberg *et al.* (2001), Sick (1993, 1997), Sillett *et al.* (1997), Slud (1960, 1964), Stiles (1985), Stiles & Skutch (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon, *et al.* (1997), Wetmore (1972), Willard *et al.* (1991), Zimmer (1936c).









194

ssp *ruficaudatum*



195



196



197



ssp  
*subfulvum*



198



199



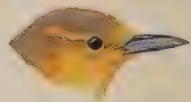
200



ssp  
*rufum*



ssp *bolivianum*



ssp *panerythrum*

201



202



203



ssp  
*colombianum*



ssp *riveti*



204



205

PLATE 26

inches 4  
cm 10



## Genus *PHILYDOR* Spix, 1824

### 194. Rufous-tailed Foliage-gleaner

#### *Philydor ruficaudatum*

**French:** Anabate rougequeue **German:** Olivrücken-Blattspäher **Spanish:** Ticotico Colirrufo

**Taxonomy.** *Anabates ruficaudatus* d'Orbigny and Lafresnaye, 1838, Yuracarés (probably in Cochabamba), Bolivia.

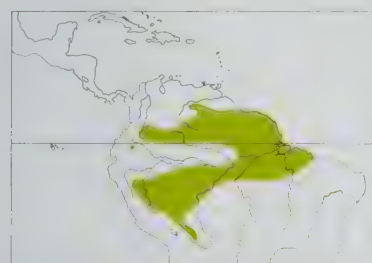
Has no obvious sister-species. Races intergrade extensively; populations from SE Colombia included within race *flavipectus* but may be intergrades between that race and *subflavescens*; populations from the Guianas and NE Brazil are apparently intergrades between *flavipectus* and nominate; and those from SE Peru between *subflavescens* and nominate. Quantitative analysis, with more thorough sampling, is likely to reveal that all variation is clinal and not worthy of nomenclatural recognition. Species name often spelt "*ruficaudatus*", but must agree with neuter gender of genus. Three subspecies tentatively recognized.

#### **Subspecies and Distribution.**

*P. r. flavipectus* Phelps, Sr. & Gilliard, 1941 - SE Colombia (S from W Meta and Vaupés), SE Venezuela (S from C Amazonas and NW Bolívar), the Guianas and NE Brazil.

*P. r. subflavescens* Cabanis, 1873 - E Ecuador (very local, near Andes) and E Peru.

*P. r. ruficaudatum* (d'Orbigny & Lafresnaye, 1838) - the Guianas, NE & Amazonian Brazil (Amazonas E to N Maranhão), SE Peru (E Ucayali) and N Bolivia (S to Cochabamba and NE Beni).



**Descriptive notes.** 16-17 cm; 21-32 g. Rather plain, dull, medium-sized furnariid; the only *Philydor* with some ventral streaking. Has broad, conspicuous dull ochraceous eyering, narrow buff-yellow supercilium extending posteriorly, dark olive postocular band; lores, auriculars and area below eye olive-brownish with yellowish-buff flecking and streaking; crown dark olive with faint paler shaft spots, becoming streaks on hindcrown; back and rump dark olive, some pale shaft streaks on upper back; uppertail-coverts tipped rufous; wings mainly dark olive-brown, conspicuously darker primary coverts; tail nearly square, shafts slightly stiffened basally, rounded tips, rufous; malar area buff-yellow, narrow dark brown malar streak; throat buff-yellow, darker feather bases showing through irregularly; breast dull buff-yellow with blurry streaks of olivaceous brown, belly mostly dull buff yellow with hint of streaking, flanks and undertail-coverts slightly darker, more olivaceous; iris brown; upper mandible blackish to greyish-brown, lower mandible paler, greenish-grey to olive-green; tarsus and toes yellowish-brown to olive-green. Sexes alike. Juvenile is browner, less olive, on upperparts, darker, less yellowish, below, supercilium more conspicuous and ochraceous. Race *flavipectus* is like nominate but throat darker yellowish, underparts in general more yellowish, supercilium, auriculars and underwing-coverts more ochraceous; *subflavescens* supposedly has clearer yellow throat than nominate, less noticeable streaking below. **Voice.** Song a loud, staccato series of up to 25 "te" or "ke" notes, descends and accelerates at end, or on same pitch, accelerating, then decelerating slightly at end, c. 3-3.5 seconds long; also shorter, more variable "wt-pt-pt, wit-wit-wit, d-d-d-d-d-d-d-d", c. 1.5-2 seconds. Call note undescribed.

**Habitat.** Tropical lowland evergreen forest and seasonally flooded forest; mostly *terra firme* forest, locally tall *várzea*. Mostly below 850 m; to 1300 m in Venezuela.

**Food and Feeding.** Diet primarily Orthoptera, Coleoptera, and spiders; Heteroptera also recorded. Forages singly or in pairs, almost always in mixed-species flocks, frequently in association with *P. erythrocerum*; from mid-storey to canopy. Dead-leaf specialist; gleans arthropods from dead leaves, occasionally foliage. In a study in SE Peru, 92% of foraging manoeuvres were directed at dead leaves, and 39% of these at undehiscent leaves at branch tips (most avian dead-leaf specialists search fallen leaves); in another study there, 52% of foraging manoeuvres directed at dead leaves, the rest at live foliage, branches (especially undersides of branches 1-4 cm in diameter) and vine stems.

**Breeding.** No information; nest not described. Estimated territory size 12 ha in transitional forest in SE Peru.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare to locally common. Densities of 3-5/km<sup>2</sup> found in transitional forest in SE Peru, and 1-9/km<sup>2</sup> at four *terra firme* sites in French Guiana. Occurs in several protected areas, e.g. Manu National Park and Biosphere Reserve, in Peru.

**Bibliography.** Angehr & Auca (1997), Blake (1950b), Cadena, Álvarez *et al.* (2000), Chapman (1926), Cory & Hellmayr (1925), Foster *et al.* (1994), Gyldenstolpe (1951), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Munn (1985), Munn & Terborgh (1979), Oren & Parker (1997), Parker *et al.* (1982), Parkes (1974), Pinto (1978), Remsen (2003a), Remsen & Parker (1984), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1995, 1997), Robinson *et al.* (1990), Rodner *et al.* (2000), Rosenberg (1997), Schulenberg *et al.* (2001), Sick (1993, 1997), Snyder (1966), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Taczanowski (1884), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1986, 1988a, 1988b, 1994), Tostain *et al.* (1992), Zimmer, J.T. (1935a), Zimmer, K.J. *et al.* (1997).

### 195. Slaty-winged Foliage-gleaner

#### *Philydor fuscipenne*

**French:** Anabate à ailes sombres **German:** Schieferflügel-Blattspäher **Spanish:** Ticotico Aligris  
**Other common names:** Rufous-bellied Foliage-gleaner; Dusky-backed/Dusky-winged Foliage-gleaner (*fuscipenne*); Rufous-backed/Santander Foliage-gleaner (*erythronotum*)

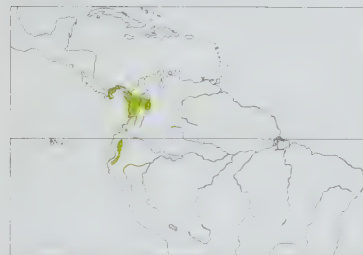
**Taxonomy.** *Philydor fuscipennis* Salvin, 1866, Santiago, Veraguas, Panama.

Finer details of plumage suggest that this species is most closely related to *P. erythrocerum*, and was formerly treated as conspecific. Considered by some authors to be closer to *P. pyrrhodes* because of overall plumage similarities. Race *erythronotum* has sometimes been treated as a separate species; disjunct population in W Ecuador probably represents an undescribed taxon. Proposed race *fulvescens*, described from a single specimen from N Colombia, represents a plumage of nominate race. Species name often spelt "*fuscipennis*", but must agree with neuter gender of genus. Two subspecies recognized.

#### **Subspecies and Distribution.**

*P. f. fuscipenne* Salvin, 1866 - C Panama (Veraguas, Coclé, E Colón, Canal area).

*P. f. erythronotum* P. L. Sclater & Salvin, 1873 - E Panama (E from E San Blas and E Panamá) to N & SW Colombia (E to N Santander and N Caldas, S to Chocó; Nariño) and W Ecuador (S Pichincha S to El Oro and NW Azuay).



**Descriptive notes.** 17 cm; 25-28 g. Rather dark *Philydor*. Nominate race has vague eyering pale rufescent ochre, conspicuous supercilium pale rufescent ochre, darkening posteriorly, postocular band dull dark brownish, auriculars and band below eye dull dark brownish with dull rusty flammulations, lores grizzled fuscous and buff; crown dark brown with very faint dark rufescent shaft spotting, indistinct dark rusty-rufous collar extending to side of neck; back rich rufescent brown, becoming chestnut-rufous on rump and uppertail-coverts; wing-coverts dull brown, primary coverts dark slaty brown, remiges slaty grey-brown; tail rounded,

shafts slightly stiffened basally, somewhat rounded tips, rufous-chestnut; throat orange-buff to tawny-orange or bright rusty; underparts similar, slightly deeper rufescent on central breast, progressively duller and slightly paler towards belly, side of upper breast browner, sides and flanks to undertail-coverts darker rufescent brown or chestnut-brown; iris brown; upper mandible grey to blackish, lower mandible grey to horn; tarsus and toes grey-green to greenish-yellow. Sexes alike. Juvenile is generally more rufous, with ochraceous underparts. Race *erythronotum* is paler and duller throughout, in Ecuador more ochraceous below. **Voice.** Song a monotonic accelerating trill; contact call a sharp "chef".

**Habitat.** Tropical lowland evergreen forest, usually hilly, also tall second growth; mainly 500-1000 m, locally to 1200 m.

**Food and Feeding.** Diet primarily Orthoptera, spiders and their eggs, and Coleoptera; Heteroptera and small lizards also recorded. Forages solitarily or in pairs, usually in mixed-species flocks, from undergrowth to lower mid-storey. Usually works along or climbs up branches; acrobatically gleans arthropods from dead leaves and epiphytes; probably a dead-leaf specialist.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to rare; uncommon to locally fairly common in Panama. Rare to locally fairly common in W Ecuador, and occurs in Rio Palenque Science Centre; disjunct population in that country considered vulnerable because of extensive destruction of lowland forests.

**Bibliography.** Anon. (1998a), Cory & Hellmayr (1925), Hilty & Brown (1983, 1986), Kratter & Parker (1997), Meyer de Schauensee (1950), Parker & Carr (1992), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Robbins *et al.* (1985), Salaman, Donegan & Cuervo (2002), Stotz *et al.* (1996), Todd (1950b), Wetmore (1972), Zimmer (1935a).

### 196. Rufous-rumped Foliage-gleaner

#### *Philydor erythrocerum*

**French:** Anabate à croupion roux **German:** Rostbüzel-Blattspäher **Spanish:** Ticotico Lomirrufo  
**Other common names:** Rufous-rumped Leaf-gleaner; Ochre-bellied Foliage-gleaner (*ochrogaster*)

**Taxonomy.** *Anabates erythrocerum* Pelzeln, 1859, Manaus, Brazil.

Finer details of plumage suggest that this species is most closely related to *P. fuscipenne*, and was formerly treated as conspecific. Distinctive montane race *ochrogaster* often treated as a separate species; despite striking plumage differences, however, song is similar to, if not indistinguishable from, that of nominate. Race *lyra* varies clinally in plumage coloration from W to E. Species name often spelt "*erythrocerus*", but must agree with neuter gender of genus. Five subspecies recognized.

#### **Subspecies and Distribution.**

*P. e. erythrocerum* (Pelzeln, 1859) - the Guianas and NE Brazil (E from R Negro, S to R Amazon).

*P. e. subfulvum* P. L. Sclater, 1862 - S Colombia (S from W Meta), E Ecuador and N Peru (N of R Amazon, W of R Ucayali).

*P. e. suboles* Todd, 1948 - SE Colombia (Amazonas) and NW Brazil (N of R Amazon, E to R Negro).

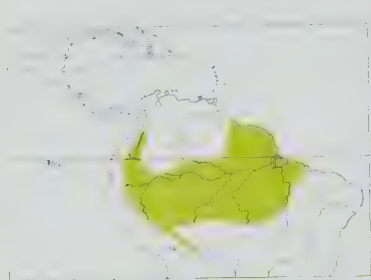
*P. e. lyra* Cherrie, 1916 - Amazonian E Peru (S of R Amazon, E of R Ucayali), Brazil (E, S of R Amazon, to N Maranhão, S to Mato Grosso) and N Bolivia (Pando, N Beni).

*P. e. ochrogaster* Hellmayr, 1917 - Andes from C Peru (S from Huánuco) S to NC Bolivia (S to Cochabamba, sight reports to NW Santa Cruz).

**Descriptive notes.** 14-15 cm; 18-31 g. Rather small, dull *Philydor* with conspicuously contrasting tail. Nominate race has conspicuous narrow supercilium and eyering pale tawny-buff, rest of face dark fuscous brown, some dull ochraceous shaft streaking on auriculars; crown to back dull, rather dark olive-brown, crown with slightly paler faint shaft spots; rump and uppertail-coverts bright chestnut; wings dull dark olive-brown, slightly darker primary coverts; tail slightly rounded, shafts slightly stiffened basally, rounded tips, bright rufous; throat and malar area (flaring into side of neck) pale yellowish-buff; breast and belly dull medium brownish, tinged olive, flanks and undertail-coverts slightly darker, slightly tinged dark rufescent; iris brown to dark brown; upper mandible blackish to brownish, lower mandible paler, horn-brown to pinkish-grey; tarsus and toes greyish-green to yellowish-olive. Sexes alike. Juvenile has crown more rufescent, underparts less yellowish, supercilium and malar area more conspicuous, more rufous-orange, and extending posteriorly

On following pages: 197. Chestnut-winged Foliage-gleaner (*Philydor erythropterum*); 198. Ochre-breasted Foliage-gleaner (*Philydor lichtensteini*); 199. Alagoas Foliage-gleaner (*Philydor novaesi*); 200. Black-capped Foliage-gleaner (*Philydor atricapillus*); 201. Buff-fronted Foliage-gleaner (*Philydor rufum*); 202. Cinnamon-rumped Foliage-gleaner (*Philydor pyrrhodes*); 203. Russet-mantled Foliage-gleaner (*Philydor dimidiatum*); 204. Dusky-cheeked Foliage-gleaner (*Anabazenops dorsalis*); 205. White-collared Foliage-gleaner (*Anabazenops fuscus*).





to meet vague rufous-orange collar. Race *lyra* is like nominate, but upperwing-coverts and outer webs of remiges brighter, with cinnamon or rusty tinge, back redder, underparts slightly more buffy, varies clinally, populations from E of range with back more greenish-olive (less brownish) and underparts more yellowish (less buffy); *suboles* differs from previous in having duller and paler underparts, without buff wash, more olivaceous (less brownish) wing edgings; *subfulvum* is like nominate, but rump less rufous, and underparts slightly more ochraceous; *ochrogaster* very different from others, has upperparts tinged tawny olivaceous,

underparts tawny-ochraceous, rump more rufous, supercilium and throat brighter ochraceous. VOICE. Song a slightly ascending and then descending series of 4-6 high notes, "chu, chee, chee, ché, chu"; call notes described as shrill "wheeeeyk" and "cheeyu" or "chak".

**Habitat.** Tropical lowland evergreen forest, mainly *terra firme* but locally in *várzea*; mainly below 1300 m. Montane evergreen forest at 800-1650 m in Andes (*ochrogaster*).

**Food and Feeding.** Recorded dietary items (race *lyra*) are spiders, Orthoptera (Acridoidea), Coleoptera (including families Cicindellidae, Curculionidae), Lepidoptera, Hymenoptera. Forages singly, occasionally in pairs, usually in mixed-species flocks, frequently in association with *P. ruficaudatum*; mainly in subcanopy, regularly to mid-storey and canopy. Dead-leaf specialist. Gleans and pulls arthropods from dead leaves, palm fronds and debris, especially in vine tangles; often uses acrobatic manoeuvres to reach dead leaves. At a site in SE Peru, 80% of observed foraging manoeuvres were directed at dead leaves, and once seen to hang from one foot and grab and pull dead leaf with other foot; at another site in same region, 50% of foraging manoeuvres directed at dead leaves, the remainder at branches (especially undersides of branches 1-4 cm in diameter) and vine stems.

**Breeding.** Breeds during dry season in French Guiana. One nest described, in hole 30 cm deep in old tree stump, nest-chamber with pad of wood fibres; clutch 2 eggs; only one bird attended nest. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common. Densities estimated at 9-20/km<sup>2</sup> in transitional forest in SE Peru and 10-28/km<sup>2</sup> at four *terra firme* sites in French Guiana. Occurs in many protected areas, including Raleigh Falls-Voltzberg National Park, in Surinam, Cuyabeno Reserve and Rio Palenque Science Centre, in Ecuador, Manu National Park and Biosphere Reserve, in Peru, and Cristalino State Park, in Brazil.

**Bibliography.** Alonso *et al.* (2001), Blake (1950b), Bond (1945), Cory & Hellmayr (1925), Graves & Zusi (1990), Gyldenstolpe (1945b, 1951), Haverschmidt & Mees (1994), Hilty & Brown (1986), Munn (1985), Novaes (1990), Parker & Bailey (1991), Parker, Bates & Cox (1992), Parker, Parker & Plenge (1982), Pinto (1978), Remsen (2003a), Remsen & Parker (1984), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robbins *et al.* (1985), Robinson & Terborgh (1995, 1997), Robinson *et al.* (1990), Rodner *et al.* (2000), Romero (1978), Rosenberg (1997), Schubart *et al.* (1965), Schulenberg *et al.* (2001), Sick (1993, 1997), Snyder (1966), Stotz *et al.* (1996), Terborgh *et al.* (1984), Thiollay (1986, 1988a, 1988b, 1994), Todd (1948b), Tostain *et al.* (1992), Wetmore (1972), Zimmer (1930, 1935a).

## 197. Chestnut-winged Foliage-gleaner

### *Philydor erythropterus*

**French:** Anabate à ailes rousses

**Spanish:** Ticotico Alicastaño

**German:** Kastanienflügel-Blattsphäer

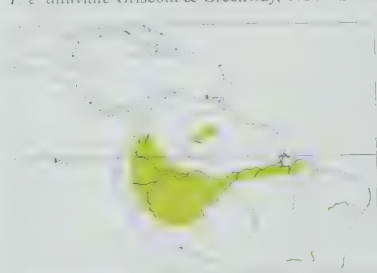
**Taxonomy.** *Anabates erythropterus* P. L. Selater, 1856, "Bogotá".

No obvious sister-species in genus. Race *diluviale* possibly represents E extreme of clinal variation of nominate; more thorough analysis required. Species name often spelt "*erythropterus*", but must agree with neuter gender of genus. Two subspecies tentatively recognized.

**Subspecies and Distribution.**

*P. e. erythropterus* (P. L. Selater, 1856) - S Venezuela (E Amazonas, S Bolívar), SE Colombia (S from W Meta), E Ecuador, E Peru, Brazil S of R Amazon (W Amazonas E to R Madeira) and NE Bolivia (S to La Paz and N Beni).

*P. e. diluviale* Griscom & Greenway, 1937 - E Brazil (C Pará, W Maranhão).



**Descriptive notes.** 17-19 cm; 28-36 g. Slightly larger-billed than congeners and with more contrast between wings and back. Has indistinct tawny supercilium from near bill base, where almost orange-buff, to behind eye, becoming narrower and duller posteriorly; broad but indistinct eye-ring buffy, postocular area dark grey; auriculars dull brownish, bordered below by indistinct darker streak that extends forwards to brownish lores; crown dull brownish-grey with buff shaft streaks, fading posteriorly; back and rump dull greyish-brown, uppertail-coverts slightly paler; wing-coverts rufous with blackish shaft streaks, remiges

slightly darker with dark fuscous tips, contrastingly darker chestnut primary coverts; tail slightly rounded, shafts slightly stiffened basally, rather rounded tips, dark rufous; throat and malar area ochraceous yellow; breast light dull brownish with vague ochraceous tawny streaking that fades posteriorly, belly slightly paler, flanks and undertail-coverts dull, light greyish-brown; iris brown to dark brown; upper mandible dark brown to brownish, lower mandible paler, greenish-horn to yellowish-green; tarsus and toes yellowish-green to light greenish-olive. Sexes alike. Juvenile is slightly paler and duller throughout, throat darker, breast lacking or almost lacking streaks. Race *diluviale* was described as having browner, less greyish, upperparts, especially on rump and uppertail-coverts, much more buffy breast, browner (less greyish) sides, flanks and undertail-coverts. VOICE. Song a fast, buzzy, slightly accelerating, quavering or slightly descending trill, duration 2-3 seconds; call undescribed.

**Habitat.** Tropical lowland evergreen forest and flooded forest; mostly *terra firme* and transitional forest, also *várzea* forest (possibly primarily so in N portions of range). Mostly below 500 m, locally to 1200 m.

**Food and Feeding.** Arthropods. Usually in pairs, almost always in mixed-species flocks, from mid-storey to canopy. Acrobatically gleans and pulls food items from live and dead leaves, some-

times twigs, usually towards ends of branches in outer shell of tree's foliage.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common. Density estimated at 4-5/km<sup>2</sup> in transitional forest in SE Peru. Occurs in several protected areas, including Amacayacu National Park, in Colombia, and Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru.

**Bibliography.** Cadena, Alvarez *et al.* (2000), Cory & Hellmayr (1925), Foster *et al.* (1994), Gyldenstolpe (1945a, 1951), Hilty (2003a), Hilty & Brown (1986), Munn (1985), Parker & Bailey (1991), Parker *et al.* (1982), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Robinson *et al.* (1990), Rodner *et al.* (2000), Schulenberg *et al.* (2001), Sick (1993, 1997), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Taczanowski (1884), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990).

## 198. Ochre-breasted Foliage-gleaner

### *Philydor lichtensteini*

**French:** Anabate de Lichtenstein

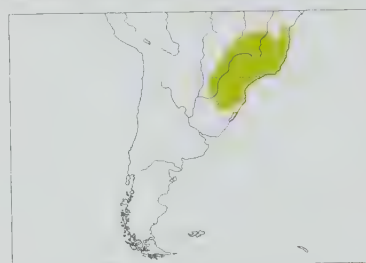
**Spanish:** Ticotico Ocráceo Chico

**German:** Schuppenscheitel-Blattsphäer

**Other common names:** Lichtenstein's Foliage-gleaner

**Taxonomy.** *Philydor Lichtensteini* Cabanis and Heine, 1859, Brazil. Monotypic.

**Distribution.** SE Brazil (S Bahia, S Goiás and S Mato Grosso do Sul S to Rio Grande do Sul), E Paraguay and NE Argentina (Misiones).



**Descriptive notes.** 15-17 cm; 18-24 g. The shortest-billed member of genus. Has broad, sharply defined supercilium and weakly defined eyering pale ochraceous, conspicuous postocular band dull dark brownish, auriculars dull rufous-ochre, lores dull pale brownish; crown dull grey-brown with vague paler shaft streaking, partly concealed blackish spotting on bases of hindcrown feathers; back rufescent brown, rump and uppertail-coverts slightly paler; wings rufous-brown, dusky tips of remiges; tail slightly rounded, shafts slightly stiffened basally, somewhat pointed tips (hint of bare "spine" in fresh plumage), dull rufous

except for rufescent brown outer webs of central rectrices; throat and malar area bright ochraceous buff, becoming richer on breast; lower breast and rest of underparts slightly duller; iris brown; upper mandible brownish-grey, lower mandible light grey; tarsus and toes greenish-grey. Sexes alike. Juvenile has less uniformly coloured underparts with feathers tipped greyish. VOICE. Song a fast, descending series of dry notes.

**Habitat.** Tropical lowland evergreen forest and secondary forest; from near sea-level to 800 m.

**Food and Feeding.** Recorded dietary items are Coleoptera (including Curculionidae), spiders, and Lepidoptera. Usually in mixed-species flocks; forages from mid-storey to canopy. Probably dead-leaf specialist. Acrobatically gleans and pulls arthropods from dead leaves and debris; hangs down to inspect undersides of branches.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to common. In Brazil, common in Iguazu National Park, fairly common in Tijuca National Park, uncommon in Augusto Ruschi Biological Reserve, and rare in Itatiaia National Park; present also in Rio Doce and Serra do Mar State Parks. In Paraguay, common in Caaguazú, Cerro Corá and Ybicuí National Parks, and present also in San Rafael National Park. In Argentina, occurs in Iguazú National Park. Extensive deforestation within its relatively small range has dramatically reduced amount of available habitat; nevertheless, seems able to persist in degraded forest fragments.

**Bibliography.** Anon. (2003d), Aleixo (1997), Aleixo & Galetti (1997), dos Anjos *et al.* (1997), Belton (1984), Brooks *et al.* (1993), Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Goerck (1999a), Gonzaga *et al.* (1995), Hayes (1995), Hayes & Scharf (1995a, 1995b), Madroño, Clay *et al.* (1997), Madroño, Robbins & Zyskowski (1997), Marini (2001), Mazar Barnett & Pearman (2001), Naka *et al.* (2002), Narosky (1983), Navas & Bö (1988), Olrog (1963a), Parker & Goerck (1997), de la Peña (1988), Pinto (1978), Remsen (2003a), Ridgely & Tudor (1994), Robbins *et al.* (1999), Schubart *et al.* (1965), Scott & Brooke (1985), Sick (1993, 1997), Stotz *et al.* (1996), Willis & Schuchmann (1993).

## 199. Alagoas Foliage-gleaner

### *Philydor novaesi*

**French:** Anabate d'Alagoas

**German:** Alagoasblattsphäer

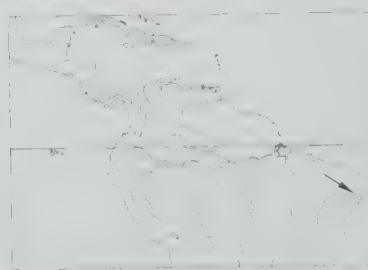
**Spanish:** Ticotico de Alagoas

**Other common names:** Greater Black-capped/Novaes's Foliage-gleaner

**Taxonomy.** *Philydor novaesi* Teixeira and Gonzaga, 1983, Serra Branca, c. 9°15' S, 25°50' W, c. 550 m, Município de Murici, Alagoas, Brazil.

Evidently forms a superspecies with *P. atricapillus*. Monotypic.

**Distribution.** Alagoas, in NE Brazil.



**Descriptive notes.** 18 cm; 30-38 g. Has conspicuous pale buff supercilium and eyering, blackish-brown postocular band, pale buff auriculars bordered below by blackish-brown band; lores dull buffy rufous; crown dark brown, faint shaft spotting on forehead, hint of streaks in centre of crown; back dull rufous-brown, rump slightly more rufous, uppertail-coverts brighter rufous; wings mainly dark rufous-brown, primary coverts and centres of greater secondary coverts darker, tips of remiges dark fuscous; tail slightly rounded, shafts slightly stiffened basally, nearly rounded tips, bright rufous; chin, throat and underparts

dull rufescent, flanks slightly duller, undertail-coverts more rufous; iris brown; bill blackish-brown



above, ivory below; tarsus and toes greenish-horn. Differs from similar *P. atricapillus* in being less rufous throughout, with less bold, less contrasting face pattern. Sexes alike. Juvenile undescribed. **VOICE.** Song a trilled series of notes; alarm "thoor" or "theer".

**Habitat.** Tropical lowland evergreen forest and humid, hilly second-growth forest; 400–550 m.

**Food and Feeding.** Recorded dietary items are Coleoptera and their larvae, Orthoptera (Acrididae), and ants. Observed singly or in pairs, usually in mixed-species flocks, from undergrowth to mid-storey. Acrobatically gleans food items from dead leaves, live foliage, debris and bark; seen also to pull larvae from dead wood.

**Breeding.** No information. Immature found in Mar.

**Movements.** Resident.

**Status and Conservation.** CRITICAL. Restricted-range species; present in Atlantic Slope of Alagoas and Pernambuco EBA. Rare; range extremely small, c. 30 km<sup>2</sup>. Known from just a single site in Alagoas, at Murici, where first discovered in 1979; was not observed between 1992 and 1997, but a single individual recorded in each of following two years, and four in 2000. Global population estimated at 50–249 individuals at end of 20th century; declining rapidly as a result of habitat destruction. Survives in only a patch of forest of c. 1500 ha, the remnant of what was only 8500 ha at time of this species' discovery; although this remaining patch is protected by law, illegal cutting still occurs, and uncontrolled fires are a threat. Forest at Murici is privately owned, and several conservation initiatives aimed at preventing further loss of habitat have proved unsuccessful. Enforcement of protection measures is essential if this species is not to become extinct in the near future.

**Bibliography.** Bernardes *et al.* (1990), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cordeiro (2001), Goerck (2002), Mazar Barnett & Kirwan (1999c), Ridgely & Tudor (1994), Sick (1993, 1997), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Teixeira (1986), Teixeira & Gonzaga (1983b, 1985), Teixeira *et al.* (1987), Vuilleumier, LeCroy & Mayr (1992), Wege & Long (1995), Whittaker (1997, 2000).

## 200. Black-capped Foliage-gleaner

### *Philydor atricapillus*

**French:** Anabate à tête noire

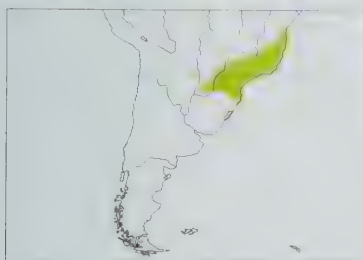
**Spanish:** Ticotico Cabecinegro

**German:** Schwarzscheitel-Blattsphäer

**Taxonomy.** *Anabates atricapillus* Wied, 1821, Rio Catolé, Bahia, Brazil.

Evidently forms a superspecies with *P. novaesi*. Named form *Philydor hylobius*, previously believed by some to be an isolated population of present species, in fact represents the juvenile plumage of *Automolus roraimae*. Species name invariable, so, in contrast to the cases of several other taxa currently recognized within *Philydor*, must not be made to agree with neuter gender of genus. Monotypic.

**Distribution.** SE Brazil (S Bahia S to S Mato Grosso do Sul and NE Rio Grande do Sul), E Paraguay and extreme NE Argentina (N Misiones).



**Descriptive notes.** 16–17 cm; 17–27 g. One of the most striking foliage-gleaners, with distinctive "tiger-striped" head pattern, strongly rufous coloration (reported N–S clinal variation from rufescent to olivaceous not corroborated). Has conspicuous pale buff supercilium, becoming light orange-rufous posteriorly, broad pale buff eyering; postocular band blackish-brown, bordered below by band of pale buff, then by another narrower blackish-brown band, this extending anteriorly to beneath gape; lores dull buffy rufous, interrupted by blackish-brown streak that extends anteriorly from crown; crown blackish-brown, faint shaft spotting on

forehead and hint of streaks in centre of crown; back rich rufous-brown, rump slightly paler and more rufous, uppertail-coverts bright orange-rufous; wings mainly rich brown, primary coverts and centres of greater secondary coverts darker, tips of remiges dark fuscous; tail slightly rounded, shafts slightly stiffened basally, nearly rounded tips, bright rufous; chin, upper throat and malar area light orange-rufous, becoming duller and darker on lower throat; breast and belly fairly uniform dark orange-rufous, flanks slightly duller, undertail-coverts bright rufous; iris brown; upper mandible mostly blackish, lower mandible pale grey to greenish-grey; tarsus and toes pale ochre-yellow to light olive-grey. Differs from similar *P. novaesi* in brighter, more rufous coloration, stronger and more contrasting head pattern. Sexes alike. Juvenile has feathers of underparts margined dark brown. **VOICE.** Song a somewhat musical, whistled, fast, sharply descending trill; also gives irregular series of squeaky notes, and "pit-wit".

**Habitat.** Tropical lowland evergreen forest and secondary forest; recorded from near sea-level to 1050 m.

**Food and Feeding.** Various arthropods. In detailed analysis of diet in relation to prey availability in dead leaves, bulk of food found to consist of adult Coleoptera and spiders, with cockroaches (Blattodea), Orthoptera, ootheca, moths and their larvae, Heteroptera, Chilopoda, Diptera and Hymenoptera also represented; in proportion to relative availability, however, strong preference for adult Lepidoptera and ootheca, moderate preference for Coleoptera, spiders and insect eggs, and avoidance of ants. Singly or in pairs, often in mixed-species flocks, from undergrowth to canopy. Works along branches, occasionally clings to trunks; acrobatically gleans and pulls arthropods from dead leaves, debris, vine stems, foliage, epiphytes (especially bromeliads) and bark crevices.

**Breeding.** Little information. Nest not described, but reported to be in hole in dirt bank.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common in Brazil; rare in Paraguay. In Brazil, fairly common in Sooretama and Augusto Ruschi Biological Reserves and in Itatiaia and Iguaçu National Parks; uncommon in Serra dos Órgãos National Park. In Paraguay, uncommon in Caaguazú National Park and present in San Rafael National Park. Occurs in Iguaçu National Park, in Argentina. Extensive deforestation within its relatively small range has dramatically reduced the area of this species' habitat. Seems able to persist in small forest fragments and in moderately degraded forest.

**Bibliography.** Alexio & Galetti (1997), dos Anjos *et al.* (1997), Anon. (2003d), Belton (1984), Brooks *et al.* (1993), Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1925), Goerck (1999a), Hayes (1995), Madroño, Clay *et al.* (1997), Madroño, Robbins & Zyskowski (1997), Mallet-Rodrigues (2001), Mazar Barnett & Pearman (2001), Mitchell (1957), Naka *et al.* (1983), Navas & Bó (1988), Olrog (1963a), Parker & Goerck (1997), de la Peña (1988), Pinto (1978), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993, 1997), Stotz *et al.* (1996), Willis & Schuchmann (1993).

## 201. Buff-fronted Foliage-gleaner

### *Philydor rufum*

**French:** Anabate roux

**German:** Ockerstim-Blattsphäer

**Spanish:** Ticotico Ocráceo Grande

**Other common names:** Buff-fronted Leaf-gleaner

**Taxonomy.** *Dendrocopus rufus* Vieillot, 1818, Rio de Janeiro, Brazil.

No obvious close relatives. Racial identity of population in C Falcón, in Venezuela, uncertain; presumed to belong with race *colombianum*. Nominat race varies clinally in size, with smallest birds farthest S. Species name often spelt "rufus", but must agree with neuter gender of genus. Seven subspecies recognized.

**Subspecies and Distribution.**

*P. r. panerythrum* P. L. Slater, 1862 - highlands of Costa Rica and W Panama (E to W Chiriqui and Bocas del Toro), and C & E Andes of Colombia (Antioquia, Caldas, and W slope from Santander S to Cundinamarca).

*P. r. colombianum* Cabanis & Heine, 1859 - N Venezuela in C Falcón (Sierra de San Luis) and coastal mountains (Yaracuy, and Carabobo E to Miranda).

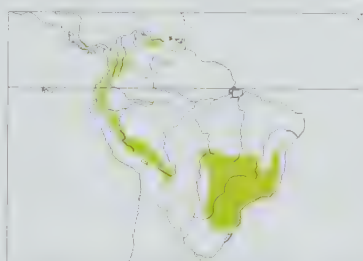
*P. r. cuchiverus* Phelps, Sr. & Phelps, Jr., 1949 - Cerro Calentura (N Amazonas) and Cerro El Negro (NW Bolívar), in S Venezuela.

*P. r. riveti* Menegaut & Hellmayr, 1906 - W Andes from Colombia (S from C Chocó) S to NW Ecuador (S to Pichincha, also El Oro).

*P. r. bolivianum* Berlepsch, 1907 - foothills of E slope from Ecuador (S from W Napo) S to C Bolivia (S to Chuquisaca).

*P. r. chapadense* J. T. Zimmer, 1935 - SW Brazil (Mato Grosso, S Goiás).

*P. r. rufum* (Vieillot, 1818) - E & SE Brazil (Minas Gerais, SE Bahia and Espírito Santo S to S Mato Grosso do Sul and N Rio Grande do Sul), E Paraguay and NE Argentina (Misiones, NE Corrientes).



**Descriptive notes.** 18–19 cm; 25–36 g. The longest-tailed *Philydor*, and the only one with contrasting forehead and pointed rectrices. Nominat race has ochraceous supercilium exceptionally broad and contiguous with forehead; postocular band dull dark brownish-grey, auriculars dull ochraceous, loreal crescent dark brownish-grey; forehead ochraceous, rest of crown dull brownish-grey with hint of paler shaft streaks; uppermost back also dull brownish-grey, rest ochraceous brown, rump and uppertail-coverts slightly paler; wings mainly bright rufous, primary coverts darker, duller; tail rounded, shafts slightly stiffened basally, strongly pointed

tips (hint of bare "spine" in fresh plumage), dull rufous-brown; throat, malar area and breast glowing ochraceous, blending to duller belly, flanks and undertail-coverts; iris greyish-brown to dark brown to chestnut (source of variation uncertain); upper mandible blackish to dark greyish, lower mandible paler, silvery grey to olive, sometimes black basally; tarsus and toes olive to greyish-green. Sexes alike. Juvenile has narrower forehead band, paler crown, darker and more rufescent underparts. Race *chapadense* is like nominat, but forehead deeper ochraceous, some ochraceous spots spreading to rest of crown, crown paler grey, back more richly coloured; *bolivianum* has crown paler and more olivaceous, not grey, contrasting less with back; *riveti* is smaller, darker on crown and back, more rufous in tail, and breast and belly washed brownish, thus contrasting more with throat; *colombianum* has forehead band narrower, duller, less sharply defined from crown, crown olivaceous (not greyish), back darker, belly much paler; *cuchiverus* is like previous, but supercilium ochraceous rather than buff, *panerythrum* has crown and back paler than last, more greyish, underparts a more uniform and deeper ochraceous. **VOICE.** Song a fast, accelerating series of staccato, metallic notes, "whi-ki-ki-ke-ke-ke-kuh-kuh", sometimes descending slightly at end; evidently similar throughout much of large, disjunct range, but in Costa Rica described as squeaky "woika-woika-woika...". Call a peculiar, squeaky but harsh "shirrrr" or "chur", almost frog-like, and sharp, metallic "skik" or "chik".

**Habitat.** Montane and tropical lowland evergreen forest, and river-edge forest. Mainly humid lower montane forest and hilly tropical forest in N & W parts of range; 800–2500 m in Central America, and 600–1800 m in Andean foothills and tepui region. Mainly tropical lowland evergreen forest in SE parts of range, from near sea-level to 1000 m, locally higher.

**Food and Feeding.** Recorded dietary items are spiders and their eggs, cockroaches (Blattodea), Orthoptera including katydids (Tettigoniidae) and crickets (Gryllidae), Coleoptera, Lepidoptera larvae, and Hemiptera. Singly or in pairs, usually in mixed-species flocks; in montane SE Brazil, up to 20 individuals in a flock. Forages in subcanopy and canopy, occasionally down to understorey. Usually works along horizontal limbs to their tips with side-to-side motion; hangs down frequently in dense foliage. Acrobatically gleans arthropods from dense vegetation, particularly undersides of green leaves; also from bark, moss, debris and dead leaves. Evidently a dead-leaf specialist in Venezuela. In most places, however, is much less a searcher of dead leaves than are congeners: in SE Brazil, more than 82% of observed foraging manoeuvres were directed towards live leaves, 16% towards dead leaves, and the rest towards branches and stems; in SE Peru, 35% of foraging manoeuvres directed at dead leaves, the rest towards live foliage.

**Breeding.** Nestlings in Jun in W Colombia; eggs and nestlings in Nov in NE Argentina. Presumably monogamous. Nest in hole in dirt bank, tree cavity or wall, not clear whether excavated by bird itself or existing burrow adopted (weight of evidence favours latter); nest-chamber lined with fine grass; territory size in SE Peru c. 8–12 ha. Clutch 2–3 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to rare in much of its range, but apparent scarcity perhaps in part an artifact of difficulty in detection; fairly common in SE portion of range. Occurs in numerous protected areas, including Henri Pittier National Park, in Venezuela, Podocarpus National Park, in Ecuador, Manu National Park and Biosphere Reserve, in Peru, Iguaçu, Serra da Canastra and Itatiaia National Parks, in Brazil, and Iguaçu National Park, in Argentina.

**Bibliography.** dos Anjos & Boçon (1999), dos Anjos *et al.* (1997), Anon. (1998a), Belton (1984), Boesman (1998), Brooks *et al.* (1993), Canevari *et al.* (1991), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Fjeldså & Maijor (1996), Foster *et al.* (1994), Hayes (1995), Hernández *et al.* (1995), Hilty (1997, 2003a), Hilty & Brown (1983, 1986), Mazar Barnett & Pearman (2001), Meyer de Schauensee (1946a), Munn (1985), Narosky *et al.* (1983), Navas & Bó (1988), Novaes (1961b), Olrog (1963a), Parker & Bailey (1991), Parker & Goerck (1997), Parker *et al.* (1982), de la Peña (1988), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robbins & Ridgely (1990), Robinson & Terborgh (1995, 1997), Robinson *et al.* (1990), Rodner *et al.* (2000), Rodrigues *et al.* (1994), Schubart *et al.* (1965), Schulenberg *et al.* (2001), Scott & Brooke (1985), Sick (1993, 1997), Slud (1964), Soares & dos Anjos (1999), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Terborgh *et al.* (1984), Wetmore (1972), Willis (1989), Zimmer (1930, 1935a).



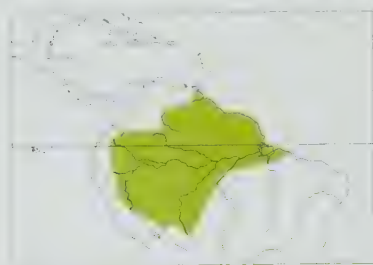
## 202. Cinnamon-rumped Foliage-gleaner

*Philydor pyrrhodes*

**French:** Anabate flamboyant **German:** Zimtbürzel-Blattspäher **Spanish:** Ticotico Lomicanelo

**Taxonomy.** *Anabates pyrrhodes* Cabanis, 1848, coast of Guyana. No obvious sister-species in genus. Monotypic.

**Distribution.** SE Colombia (S from S Meta and Vaupés), S Venezuela (Amazonas, Bolívar, Delta Amacuro) and the Guianas S to E Ecuador, E Peru, Amazonian Brazil (E to N Maranhão, S to W Mato Grosso) and N Bolivia (S to Beni, extreme N Santa Cruz).



**Descriptive notes.** 14–16 cm; 24–35 g. Distinctive, with brightest and most uniformly coloured underparts of all members of genus. Has supercilium and eyering ochraceous, weakly defined postocular area dark rufescent brown, auriculars rufescent brown, lores mostly dull rufescent brownish; crown dark rufescent brown with faint darker scalloping; back rufescent brown, rump rufous, uppertail-coverts bright orange-rufous; wings almost uniform dark fuscous brown; tail slightly rounded, shafts slightly stiffened basally, nearly rounded tips, bright orange-rufous; nearly uniform bright orange ochraceous below, slightly paler

on throat; iris brown to dark brown; upper mandible mostly dark grey to blackish, lower mandible paler, dark grey to silvery grey, sometimes with dark tip; tarsus and toes olive-greenish to yellowish-olive. Sexes alike. Juvenile has browner upperparts, paler and less rufescent throat. **Voice.** Song starts as long low trill, gradually becoming louder, then breaking into louder, vibrating, evenly ascending trill that ends abruptly, duration of whole variable, 4–15 seconds; contact call a low, loud, explosive “chack”, “chakit” or “chichid”.

**Habitat.** Tropical lowland evergreen and flooded evergreen forest; *terra firme* and *várzea* forest, often near streams and usually in areas of high palm density. Mostly below 400 m, locally to 700 m.

**Food and Feeding.** Recorded dietary items include cockroaches (Blattodea). Forages singly or in pairs, occasionally in mixed-species flocks; mostly in undergrowth, less often to mid-storey and subcanopy. Acrobatically gleans and pulls arthropods from dead leaves and debris, often among palm fronds, also from live palm fronds and large leaves, such as those of *Heliconia* and *Arum*; usually in dense vegetation.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare to uncommon throughout range. Estimated density at two sites in French Guiana 1–3 birds/km<sup>2</sup>. Occurs in many protected areas, including Imataca Forest Reserve and El Dorado, in Venezuela, and Tambopata-Candamo Reserved Zone, in Peru.

**Bibliography.** Cadena, Álvarez *et al.* (2000), Cory & Hellmayr (1925), Foster *et al.* (1994), Graves & Zusi (1990), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Kratter & Parker (1997), Novaes (1990), Oren (1990), Parker (1979), Parker & Bailey (1991), Parker *et al.* (1982), Pearson (1975c), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Rosenberg (1997), Schulenberg (2002), Sick (1993, 1997), Snyder (1966), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer & Bierregaard (1995), Terborgh *et al.* (1984), Thiollay (1986, 1988b, 1994), Tostain *et al.* (1992), Willard *et al.* (1991), Zimmer (1935a).

## 203. Russet-mantled Foliage-gleaner

*Philydor dimidiatum*

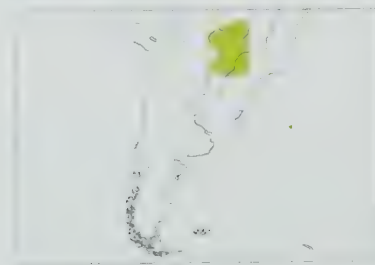
**French:** Anabate mantelé **German:** Ockerbrauner Blattspäher **Spanish:** Ticotico del Planalto  
**Other common names:** Planalto Foliage-gleaner; Baer's Foliage-gleaner (*baeri*)

**Taxonomy.** *Anabates dimidiatus* Pelzeln, 1859, Sangrador and Rio Manso, Mato Grosso, Brazil. Possibly better placed in genus *Syndactyla*; in several respects (bill shape, vocalizations) more similar to members of that genus than to those of present genus. Species name often spelt “*dimidiatus*”, but must agree with neuter gender of genus. The taxon *S. mirandae*, described from C Brazil (Goiás) and subsequently treated as a race of *S. rufosuperciliata*, is in fact a synonym of present species, presumably of race *baeri*. Latter formerly considered a separate species. Two subspecies recognized.

**Subspecies and Distribution.**

*P. d. dimidiatum* (Pelzeln, 1859) - SC Brazil (S Mato Grosso).

*P. d. baeri* Hellmayr, 1911 - interior SE Brazil (Goiás, Minas Gerais) and EC Paraguay (Concepción).



**Descriptive notes.** 17 cm; 27–32 g. The most uniformly rufescent *Philydor*; rather long, pointed bill with lower mandible slightly upturned. Nominative race has comparatively plain face rufescent orange, deeper on side of neck and on anterior supercilium, somewhat darker auriculars; crown and upperparts bright cinnamon-tinged rufescent brown; wings mostly dark rufescent brown, brighter outer edges of primaries (broad wingband); tail slightly graduated, rectrices with blunt tips, rufous-chestnut; throat and underparts mostly uniform ochraceous rufous, faint pale shaft streaks on breast, flanks more olive; iris brown; upper

mandible dark brown, lower mandible horn with pinkish base; tarsus and toes olive. Sexes alike. Juvenile has shorter bill, whitish throat with faint brown spots, brown bars on breast feathers, narrower and more pointed rectrices. Race *baeri* has bright olive-brown back, wings not so rufescent (tinged more olive-brown), also duller ochraceous below. **Voice.** Song a brief, soft, accelerating chatter followed by series of harsh, metallic, staccato “cheek” notes, concluding with brief decelerating chatter (thus different in rhythm and more strident tone from congeners, more like *Syndactyla*). Contact call a loud, nasal “chch”, single or doubled.

**Habitat.** Gallery forest and tropical lowland evergreen forest; 100–1200 m.

**Food and Feeding.** Little known. Probably arthropods. Observed usually in pairs, occasionally in mixed-species flocks. Forages along branches and among epiphytes, in understorey and mid-storey; substrate use not reported.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare to locally common. A poorly known species. Present in Das Emas Brasília and Serra da Canastra National Parks, in Brazil. In Paraguay, rare in Cerro Corá National Park and present in San Luis National Park.

**Bibliography.** Anon. (2003d), Cavalcanti & Marini (1993), Cory & Hellmayr (1925), Hayes (1995), Hayes & Scharf (1995b), Kratter & Parker (1997), Marini (2001), Novaes (1953), Pinto (1978), Pinto & Camargo (1956), Ridgely & Tudor (1994), Robbins & Zimmer (2003), Robbins *et al.* (1999), Sick (1993, 1997), Silveira (1998), Stotz *et al.* (1996).

Genus *ANABAZENOPS* Lafresnaye, 1842

## 204. Dusky-cheeked Foliage-gleaner

*Anabazenops dorsalis*

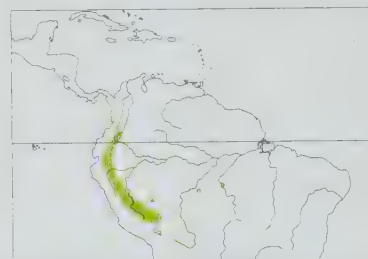
**French:** Anabate à grands sourcils **German:** Graubauch-Baumspäher **Spanish:** Ticotico Carioscuro

**Other common names:** Crested/Bamboo Foliage-gleaner

**Taxonomy.** *Automolus dorsalis* P. L. Selater and Salvin, 1880, Sarayacu, Pastaza, Ecuador.

Genus merged by some authors into a broadly defined *Philydor*. This species was until recently placed in genus *Automolus*. Nest structure, voice, habitat, morphometrics, and juvenile and adult plumage patterns all strongly suggest that its sister-species is *A. fuscus*. Monotypic.

**Distribution.** S Colombia (S from W Caquetá) S through extreme W Amazonia to N Bolivia (N La Paz), also locally in S Amazonian Brazil (Acre, Rondônia, N Mato Grosso).



**Descriptive notes.** 19 cm; 34–44 g. Rather thick-billed, plain foliage-gleaner. Has narrow greyish-buff supercilium; rest of face greyish-brown, lores with greyish crescent and paler anterior spot; crown to rump rather uniform dull reddish-brown, faint dark scalloping on crown feathers; uppertail-coverts dull chestnut; wings dull brown, dull tawny bend of wing; tail slightly rounded, rectrices slightly stiffened basally, tips slightly pointed, dark dull chestnut; throat and malar region creamy white; breast and belly grey, with fairly sharp demarcation from throat, flanks olive-brownish, undertail-coverts greyish mixed with dull rufescent; iris brown to dark brown;

upper mandible dusky horn to grey, lower mandible variable, from ivory with dusky tip to olive-grey; tarsus and toes olive to yellowish-olive. Sexes alike. Juvenile has supercilium and underparts suffused tawny-buff, upperparts more rufous. **Voice.** Song 5–24 low-pitched, evenly spaced “chhook” or “chert” notes, c. 4 per second, becoming louder after first few notes, sometimes introduced with chatter; antiphonal duet, one member of pair giving song with chattered introduction, the other a quick series of c. 9 notes during introduction. Contact call a harsh “klek” or “cheff”.

**Habitat.** Humid hilly lowland and foothill forest and second growth, especially near rivers and streams, almost always in or near *Guadua* bamboo thickets or (especially in lowland Ecuador) *Gynerium* cane thickets; mostly 200–1000 m, locally to 1300 m.

**Food and Feeding.** Arthropods. Usually singly or in pairs, occasionally in mixed-species flocks. Forages in upper levels of bamboo or cane-dominated understorey, mostly 4–8 m above ground. Hitches on or up small vertical stems and along horizontal branches and vines, using tail as brace. Gleans and pulls arthropods from dead leaves, debris and branches, especially bases of spine clusters in *Guadua* bamboo. At one site in SE Peru, more than 60% of all observed foraging was directed at *Guadua* bamboo, mostly stems and dead leaves, and almost all foraging outside bamboo directed at dead leaves.

**Breeding.** Nestlings in Aug in S Peru. Presumably monogamous. One nest was a cup 15 cm deep of fine, dried plant material, placed c. 3 m above ground in natural cavity of dead bamboo stem c. 7 cm in diameter. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare to uncommon. Restriction to bamboo naturally limits its global population size. Occurs in Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru.

**Bibliography.** Alonso *et al.* (2001), Angehr & Aucca (1997), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Foster *et al.* (1994), Hilty & Brown (1986), Kratter (1994, 1997a), Kratter & Parker (1997), Parker & Bailey (1991), Parker, Castillo *et al.* (1991), Parker, Parker & Plenge (1982), Parker, Stotz & Fitzpatrick (1997), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Robinson *et al.* (1990), Stotz *et al.* (1996), Terborgh *et al.* (1984), Whittaker & Oren (1999), Zimmer, J.T. (1935a), Zimmer, K.J. *et al.* (1997).

## 205. White-collared Foliage-gleaner

*Anabazenops fuscus*

**French:** Anabate à col blanc **German:** Halsband-Baumspäher **Spanish:** Ticotico Acollarado  
**Other common names:** Brown Anabazenops

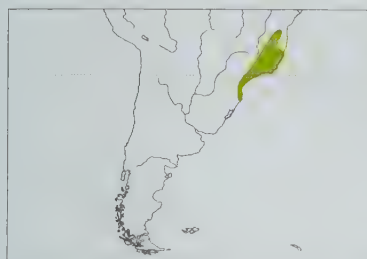
**Taxonomy.** *Sitta fusca* Vieillot, 1816, Rio de Janeiro, Brazil.

Genus merged by some authors into a broadly defined *Philydor*. Nest structure, voice, habitat, morphometrics, and juvenile and adult plumage patterns all strongly suggest that its sister-species is *A. dorsalis*. Monotypic.

**Distribution.** SE Brazil from C Minas Gerais and S Bahia S to E Santa Catarina.

**Descriptive notes.** 20 cm. Rather plain foliage-gleaner with bill slightly wedge-shaped. Has whitish supercilium sharply defined, extending posteriorly to meet white side of neck; rest of face dark brown, some paler flammulations on auriculars, lores grizzled greyish-white, dull buff





brownish lower breast and belly; flanks and undertail-coverts darker, browner; iris dark brown or dark reddish-brown; upper mandible dusky brown with pale horn cutting edges, lower mandible pale horn or pale grey; tarsus and toes olive-grey or brownish-grey or dark olive-brown. Sexes alike. Juvenile has supercilium and underparts suffused tawny-buff. **VOICE.** Song 5-42 low-pitched, evenly spaced "tchook" notes, 4-5 per second, becoming louder after first few notes; antiphonal duet, one member of pair giving sustained chatter. Also distinctive high-pitched,

supraloral streak; crown rich dark brown with faint darker scalloping, partly concealed collar buffy whitish, becoming more prominent and whiter at side of neck; back and rump brown, paler than crown, blending to dull dark rufous uppertail-coverts; wing brown like back, darker brown primary coverts, bright yellowish-buff bend of wing; tail slightly rounded, shafts slightly stiffened basally, slightly pointed (almost rounded) tips, dark rufous; throat and malar area white (made conspicuous in field by feathers being erected); upper breast tawny-tinged greyish-buff, blending to slightly darker, duller tawny-

squeaky "chek, jééurr-jééurr-jééurr-jééurr" (number of downslurred "jééurr" notes variable), and hoarse, syncopated "wrr-jek, wrjejek, wrjejek" also described. Alarm call a piercing "ghéé-eh".

**Habitat.** Montane evergreen forest and secondary forest, usually with extensive bamboo thickets; 350-1200 m.

**Food and Feeding.** Arthropods. Usually in pairs, occasionally to rarely in mixed-species flocks. Forages mainly in mid-storey, less commonly down to understorey, rarely on ground. Climbs up vertical stems. Acrobatically gleans and probes for items on branches (especially nodes of bamboo stems), also green and dead leaves; occasionally hammers holes in bamboo branches. In one study, 87% of all observed foraging attempts were directed at bamboo, mostly stems but also foliage and dead leaves; the rest were at branches, dead leaves, and live leaves of other plants.

**Breeding.** Presumably monogamous. Nest in natural cavity in branch. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout range. Fairly common in Augusto Ruschi Biological Reserve and Itatiaia National Park; uncommon in Serra dos Órgãos National Park; also present in Serra do Mar State Park. Extensive deforestation within its relatively small range has dramatically reduced area of available habitat.

**Bibliography.** Aleixo & Galetti (1997), dos Anjos *et al.* (1997), Cordeiro (2001), Cory & Hellmayr (1925), Goerck (1999a), Gonzaga *et al.* (1995), Kratter & Parker (1997), Parker & Goerck (1997), Pinto (1978), Ridgely & Tudor (1994), Rodrigues *et al.* (1994), Scott & Brooke (1985), Sick (1993, 1997), Stotz *et al.* (1996).





## PLATE 27

## Family FURNARIIDAE (OVENBIRDS) SPECIES ACCOUNTS

### Genus *CICHLOCOLAPTES* Reichenbach, 1853

#### 206. Pale-browed Treehunter

##### *Cichlocolaptes leucophrus*

French: Anabate à sourcils blancs

Spanish: Ticotico Cejipáldo

German: Zimtschwanz-Blattspäher

Other common names: Rusty-rumped Cichlocolaptes

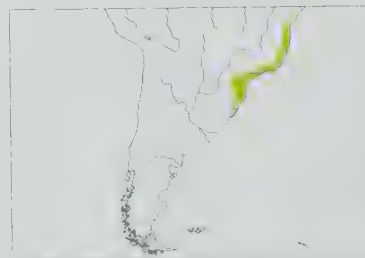
**Taxonomy.** *Anabates leucophrus* Jardine and Selby, 1830, Brazil. Genus has sometimes been merged into a broadly defined *Philydor*. No obvious close relatives; superficial plumage similarities may suggest relationship to *Pseudocolaptes*, *Heliobletus*, *Syndactyla* or *Hyloctistes*, and foraging behaviour perhaps most similar to that of first of those. Species name regularly misspelled as "*leucophrys*". Two subspecies recognized.

##### **Subspecies and Distribution.**

*C. l. leucophrus* (Jardine & Selby, 1830) - SE Brazil (S Bahia S to Rio de Janeiro).

*C. l. holti* (Pinto, 1941) - SE Brazil (São Paulo S to NE Santa Catarina and NE Rio Grande do Sul).

**Descriptive notes.** 18-23 cm. Heavily striped, dagger-billed furnariid reminiscent of some woodcreepers (Dendrocolaptidae) in plumage pattern and shape. Nominative race has buffish-white supercilium extending posteriorly to collar, and anteriorly very narrowly to supraloral region; lores



grizzled blackish and dull buff, postocular band dark brown with faint dark golden shaft streaks; rest of face dull buff, faintly flecked dark brown; crown dark brown with fine, sharply demarcated buff to rusty-buff shaft streaks, vague collar of blackish-brown feathers with broader buff streaks; back rufescent brown with long, blurry buff streaks, rump and uppertail-coverts slightly paler brown with vague buff streaking; wing-coverts brown with inconspicuous buff shaft streaks, remiges rich brown; tail nearly square, shafts stiffened basally, pointed tips, light rufous; throat pale yellowish-buff; breast strongly streaked pale buff

and brown, belly, flanks and undertail-coverts similar but with streaks fading posteriorly; iris very dark; upper mandible dusky grey, lower mandible paler, fleshy brown, greyer towards tip; tarsus and toes greenish-grey or dull yellowish-green to light brownish. Sexes alike. Juvenile has less distinct pattern of streaking on underparts. Race *holti* is substantially smaller, has darker crown, darker back, more conspicuous supercilium, darker rufous tail. **Voice.** Song loud, ringing "reep" notes, variable in number, sometimes interspersed with fast chattering notes; gives antiphonal duet. Call a loud "krip, shrip".

**Habitat.** Tropical lowland and montane evergreen forest; from near sea-level to 1400 m.

**Food and Feeding.** Arthropods. Forages, perhaps usually in mixed-species flocks, from understorey to subcanopy. Moves along larger limbs and branches, often disappears completely into clumps of



epiphytes. Probes and gleans for items, mainly from bromeliads and other epiphytic plants and from dead leaves.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Atlantic Forest Lowlands EBA. Rare to locally fairly common. Fairly common in Sooretama and Augusto Ruschi Biological Reserves, Serra do Mar State Park and Serra dos Órgãos National Park; uncommon in Itatiaia National Park. Extensive deforestation within its relatively small range has dramatically reduced the area of its habitat.

**Bibliography.** Aleixo & Galetti (1997), dos Anjos *et al.* (1997), Bencke (2001), Bencke & Kindel (1999), Cordeiro (2001), Cory & Hellmayr (1925), Goerck (1999a), Kratter & Parker (1997), Naka *et al.* (2001), Pacheco & Whitney (1997), Parker & Goerck (1997), Pinto (1941, 1978), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993, 1997), da Silva & Stotz (1992), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Whitney (2003c).

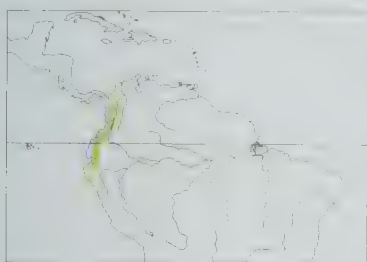
## Genus *THRIPADECTES* P. L. Sclater, 1862

### 207. Uniform Treehunter

#### *Thripadectes ignobilis*

**French:** Anabate uniforme **German:** Rotbrauner Baumspäher **Spanish:** Trepamusgos Uniforme  
**Other common names:** Chestnut-rumped Treehunter

**Taxonomy.** *Automolus ignobilis* P. L. Sclater and Salvin, 1879, Frontino, Antioquia, Colombia. No obvious sister-species within genus. Small size, relatively short bill and more arboreal foraging have suggested to some authors that this species should be treated in a monotypic genus. Monotypic.  
**Distribution.** Pacific slope of W Andes in Colombia (S from Chocó) and NW Ecuador (S to El Oro).



**Descriptive notes.** 19-20 cm; 48-51 g. The smallest, shortest-billed and darkest of genus. Has narrow, indistinct supercilium and broad but vague eyering dull tawny-rufous, lores blackish-brown grizzled with pale buff, auriculars blackish with narrow ochraceous-buff shaft streaks; side of neck and malar area dark brown with blurry dark ochraceous to rufescent brown streaks and spotting; crown dark brown, vague paler brown spotting on forehead; back and rump slightly paler and redder than crown, uppertail-coverts still slightly paler and redder; wings mostly rich dark reddish-brown; tail slightly graduated,

shafts slightly stiffened basally, pointed tips often with distal 1-2 cm without barbs (possibly only through wear), rich dark reddish-brown; throat dull dark buff with blurry broad dark brownish streaks; breast rich dark brown with narrow buff shaft streaks, belly similar but streaks vanish posteriorly, flanks dark reddish-brown, undertail-coverts slightly paler; iris dark brown; upper mandible dark brownish, lower mandible blackish with reddish-horn base to dusky yellow with dark tip; tarsus and toes greenish-brown. Sexes alike. Juvenile undescribed. VOICE. Song a fast series of 6-8 "kyip" notes.

**Habitat.** Montane evergreen forest, locally to tropical lowland evergreen forest; also tall second growth. Mostly 700-1700 m, locally down to 200 m and up to 2500 m.

**Food and Feeding.** Arthropods; reported items include a worm or insect larva 5 cm long. Usually singly, often in mixed-species flocks (evidently the only member of genus to participate so regularly). Forages in dense undergrowth, occasionally to mid-storey. Moves along low branches; gleans items from dead leaves, debris and branches.

**Breeding.** Active nest found in Jun; nestlings in Sept. Presumably monogamous. Nest in tunnel excavated in dirt bank; chicks fed by both adults. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Chocó EBA. Uncommon to locally fairly common. Occurs in Rio Nambi Natural Reserve and La Planada Nature Reserve, in Colombia.

**Bibliography.** Chapman (1926), Cory & Hellmayr (1925), Hilty (1997), Hilty & Brown (1986), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robbins & Ridgely (1990), Salaman (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Strew (2000a, 2001).

### 208. Streak-breasted Treehunter

#### *Thripadectes rufobrunneus*

**French:** Anabate des ravins **Spanish:** Trepamusgos Pechirrayado  
**German:** Ockerkehl-Baumspäher  
**Other common names:** Streaked Treehunter, Streak-breasted Leaf-gleaner

**Taxonomy.** *Philydor rufobrunneus* Lawrence, 1865, San José, Costa Rica.

Considered by some authors to be sister-species of *T. virgaticeps*, despite distance between the two in current linear sequences. Monotypic.

**Distribution.** Mountains of Costa Rica and W Panama (E to Veraguas).

**Descriptive notes.** 20-22 cm; 48-54 g. Bulky, dark furnariid with shape somewhat like that of a thrush (Turdidae). Face is mostly dark brown, with dull rufescent flammulations on auriculars; malar area dark ochraceous with dark flecking; crown blackish with long olive streaks, vague collar olive with feathers margined blackish, becoming dull rufous at side of neck; back and rump rich dark brown, blending to dark reddish-brown uppertail-coverts; wings rich dark brown, primary coverts slightly darker; tail graduated, shafts stiffened basally, pointed tips with distal 1-2 cm



lacking barbs, rich chestnut-brown; throat dull ochraceous, darker along lower border, with dull brownish streaks; breast and belly brown with narrow dull ochraceous streaks that diminish posteriorly, vanishing on lower belly, flanks darker, richer brown, undertail-coverts dark reddish-brown with vague chestnut shaft streaks; iris dark brown; bill black, sometimes base of lower mandible dull greenish-grey or greyish-horn; tarsus and toes dark brownish-grey to greenish-grey. Sexes alike. Juvenile has streaking on upper breast paler and less well defined, blackish edgings on crown feathers less distinct. VOICE. Song a series of rolling,

burry "chi-wówr" notes; also described as a series of scratchy "ek" notes accelerating into rattle. Call a harsh, grating "zeck" or "tseck" or "cheyt, cheyt"; doubled "rek-rek" also given; also prolonged grating scold, or repeated "ti-chr", possibly another version of song.

**Habitat.** Montane evergreen forest, especially in epiphyte-laden steep ravines above and along streams; also tall second growth. At 700-3000 m.

**Food and Feeding.** Arthropods, small vertebrates; recorded dietary items are Coleoptera, Orthoptera including katydids (Tettigoniidae), cockroaches (Blattodea), Lepidoptera larvae, spiders, also frogs, lizards, salamanders (*Salamandra*). Usually singly, rarely in pairs, rarely in mixed-species flocks. Forages in dense undergrowth; hops and clammers along branches, sometimes hanging down. Gleans invertebrates and small vertebrates from dead leaves, debris, moss and epiphytes (including bromeliads); tears apart large dead-leaf clusters and tank bromeliads.

**Breeding.** Season Feb-Aug; eggs in Feb-Mar and Aug, and nestlings in May. Monogamous. Nest a shallow woven pad of leaf stems or rootlets, placed in expanded chamber 15 cm in diameter at end of tunnel 45-70 cm long, curving and slanting upwards, presumably excavated by the birds themselves, in dirt bank. Clutch 2 eggs; incubation by male, possibly by both sexes; both feed nestlings.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Costa Rica and Panama Highlands EBA. Uncommon to locally fairly common. Present in fragmented forests.

**Bibliography.** Anon. (1998a), Blake & Loiselle (2000), Cory & Hellmayr (1925), Hartman (1957), Kiff *et al.* (1989), Marin & Carrión (1994), Remsen (2003a), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Skutch (1969c), Slud (1964), Stattersfield *et al.* (1998), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Wetmore (1972), Worth (1939), Zyskowski & Prum (1999).

### 209. Black-billed Treehunter

#### *Thripadectes melanorhynchus*

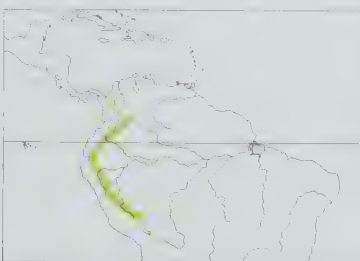
**French:** Anabate à bec noir **Spanish:** Trepamusgos Piquinegro  
**German:** Schuppenkehl-Baumspäher

**Taxonomy.** *Anabates melanorhynchus* Tschudi, 1844, forest region of Peru between 10° S and 12° S. Two subspecies recognized.

**Subspecies and Distribution.**

*T. m. striaticeps* (P. L. Sclater & Salvin, 1875) - E Andes of Colombia (S from Boyacá and W Casanare).

*T. m. melanorhynchus* (Tschudi, 1844) - E Andes in Ecuador (S from Sucumbios) and Peru (S to Puno).



**Descriptive notes.** 20-21 cm; 39-46 g. Bulky, dark furnariid shaped somewhat like a thrush (Turdidae); the only *Thripadectes* with scaly throat and virtually unstreaked underparts. Has blackish-brown face with sharply defined buff shaft streaks, some coalescing into interrupted supercilium, lores grizzled blackish-brown and buff; crown blackish-brown with narrow, striking buff shaft streaks; back dark brown with similar streaks, rump dull dark brown, blending to reddish-brown uppertail-coverts; wings mostly rich brown; tail slightly graduated, shafts slightly stiffened basally, slightly pointed at tips, dark chestnut-brown; throat ochraceous with dark brownish margins increasingly broad posteriorly, producing scaly look; breast rufescent brown with faint pale shaft streaks, belly slightly duller without streaks (except uppermost margin), flanks and undertail-coverts darker rufescent-brown; iris brown to dark brown; bill black; tarsus and toes blackish-grey to brown. Distinguished from very similar *T. holostictus* by virtually unstreaked underparts. Sexes alike. Juvenile has less distinct throat markings and back streaks. Race *striaticeps* is paler and less sooty on crown, back and auriculars than nominate, wings more rufescent, back streaks broader. VOICE. Song an accelerating, then decelerating, slightly descending series of c. 10-13 sharp "kyip" notes with "laughing" quality.

**Habitat.** Montane evergreen forest; also second growth, and stunted forest on ridges. At 1000-1700 m.

**Food and Feeding.** Arthropods, possibly also small vertebrates; recorded items include grasshoppers (Acrididae). Usually singly, rarely in mixed-species flock, in dense undergrowth. Food items obtained by gleaning, but substrate use not well known.

**Breeding.** Eggs in Oct in Ecuador. Presumably monogamous. Nest a pad of leaf stems placed in enlarged chamber at end of tunnel 1 m long, sloping slightly upwards, in dirt bank. One clutch contained 3 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common. Race *striaticeps* known from only one locality, but almost certainly more widespread. Occurs in a number of protected areas, e.g. Podocarpus National Park, in Ecuador.

**Bibliography.** Bohórquez (2002), Bond (1945), Cory & Hellmayr (1925), Ejdlsá & Krabbe (1990), Graves (1985), Hilty & Brown (1986), Kiff *et al.* (1989), Marin & Carrión (1994), Parker *et al.* (1982), Remsen (2003a), Renjifo *et*



al. (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Salaman, Donegan & Cuervo (1999), Salaman, Stiles *et al.* (2002), Schulenberg *et al.* (2001), Stotz *et al.* (1996), Zimmer (1936c).

## 210. Striped Treehunter

### *Thripadectes holostictus*

**French:** Anabate strié **German:** Strichelbaumpäher **Spanish:** Trepamusgos Listado

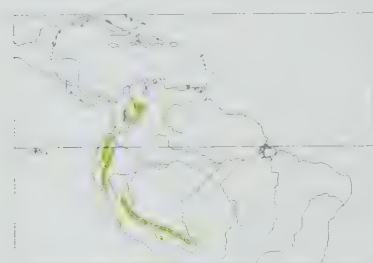
**Taxonomy.** *Automolus holostictus* P. L. Slater and Salvin, 1876, Medellín, Antioquia, Colombia. Race *striatidorsus* (Berlepsch & Taczanowski, 1884) - W Andes of W Colombia (S from Cauca) and W Ecuador (S to Chimborazo). *T. h. holostictus* (P. L. Slater & Salvin, 1876) - Andes of W Venezuela (SW Táchira), Colombia (C range, and E range from Norte de Santander S to Cundinamarca), E Ecuador and N Peru (La Libertad).

#### Subspecies and Distribution.

*T. h. striatidorsus* (Berlepsch & Taczanowski, 1884) - W Andes of W Colombia (S from Cauca) and W Ecuador (S to Chimborazo).

*T. h. holostictus* (P. L. Slater & Salvin, 1876) - Andes of W Venezuela (SW Táchira), Colombia (C range, and E range from Norte de Santander S to Cundinamarca), E Ecuador and N Peru (La Libertad).

*T. h. moderatus* J. T. Zimmer, 1935 - Andes from C Peru (Huánuco) S to C Bolivia (Cochabamba).



**Descriptive notes.** 20-21 cm; 38-49 g. Bulky, streaked furnariid resembling a thrush (Turdidae) in shape; remarkably similar to *Syndactyla subalaris*. Nominative race has blackish-brown face with buff shaft streaks, some coalescing into interrupted supercilium, lores grizzled blackish-brown and buff; crown blackish-brown with strong buff shaft streaks; back dark brown with broad buff streaks, rump dull dark brown, blending to reddish-brown uppertail-coverts; wings mostly rich brown; tail slightly graduated, shafts slightly stiffened basally, slightly pointed at tips, dark chestnut-brown; throat dull tawny-buff with dark brownish margins increasing in width posteriorly, producing short broad streaks, this pattern extending to upper breast; rest of breast medium brown with sharply defined pale buff shaft streaks, belly similar but slightly duller, streaks vanishing on lower belly, flanks darker, more rufescent, undertail-coverts darker than belly, tinged reddish-brown; iris brown to dark brown; bill black, sometimes base of lower mandible greenish-grey or greyish-horn; tarsus and toes olive-brown to greenish-grey. Distinguished from very similar *T. melanorhynchus* by heavily streaked underparts. Sexes alike. Juvenile has streaks on upperparts narrower, belly unstreaked but mottled. Race *striatidorsus* is very like nominate, but possibly with wings more reddish, flanks more rufescent, edges of throat feathers browner, less blackish; *moderatus* differs in having underparts more rufescent, less olive, with streaks narrower and tinged pale rufescent, and not extending so far posteriorly, also lateral margins of throat feathers more olive, less sooty. Voice. Song a fast series of nasal chattering notes, slightly descending and decelerating; call described as sharp, fast "kwi-di-dik".

**Habitat.** Montane evergreen forest, especially in or near *Chusquea* bamboo thickets, locally ranging into second growth. Mostly 1500-2500 m; locally down to 900 m on W slope of W Andes in Colombia, and up to 3000 m in Ecuador.

**Food and Feeding.** Invertebrates, possibly also small vertebrates. Usually forages singly, very occasionally in mixed-species flocks. Probes and gleans dead leaves and other debris trapped in dense undergrowth, usually within 1 m of ground; possibly a dead-leaf specialist.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common throughout range. Occurs in a number of protected areas, e.g. Machu Picchu Historical Sanctuary, in Peru.

**Bibliography.** Bond (1945), Chapman (1926), Cory & Hellmayr (1925), Cuervo *et al.* (2003), Fjeldså & Krabbe (1990), Graves (1985), Hilty (2003a), Hilty & Brown (1986), Meyer de Schauensee (1945), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Peters & Griswold (1943), Remsen (2003a), Remsen & Parker (1984), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salaman (1994), Salaman, Donegan & Cuervo (1999), Salaman, Stiles *et al.* (2002), Stotz *et al.* (1996), Walker (2001), Zimmer (1935b, 1936c).

## 211. Streak-capped Treehunter

### *Thripadectes virgaticeps*

**French:** Anabate à tête striée **Spanish:** Trepamusgos Cabecirrayado  
**German:** Ockerkinn-Baumpäher

**Taxonomy.** *Thripadectes virgaticeps* Lawrence, 1874, "Quito", Ecuador.

Considered by some authors to be sister-species of *T. rufobrunneus*, despite distance between the two in current linear sequences. Population in E Andes of S Colombia (in E Nariño) previously considered to belong to race *magdalenae*, but probably referable to *sumaco*; all races in Colombia and Ecuador in need of re-evaluation. Race *scelateri* possibly intergrades with nominate in SW Colombia. Six subspecies recognized.

#### Subspecies and Distribution.

*T. v. klagesi* (Hellmayr & Seifern, 1912) - N Venezuela (coastal range from Carabobo E to Distrito Federal).

*T. v. tachirensis* Phelps, Sr. & Phelps, Jr., 1958 - Andes of W Venezuela (SW Lara, SW Táchira).

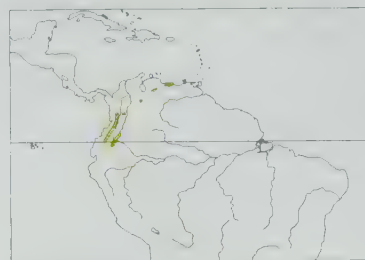
*T. v. magdalenae* Meyer de Schauensee, 1945 - W Colombia (W Andes in S Chocó, and E slope of C range in Antioquia and SW Huila).

*T. v. scelateri* Berlepsch, 1907 - W Andes of SW Colombia (Valle S to Nariño).

*T. v. virgaticeps* Lawrence, 1874 - W Andes of Ecuador (Carchi S to Pichincha).

*T. v. sumaco* Chapman, 1925 - E Andes in S Colombia (Cauquetá, E Nariño) and N Ecuador (W Napo).

**Descriptive notes.** 22-23 cm; 61-65 g. Rather large *Thripadectes* with relatively little streaking. Nominative race has blackish brown face with pale buff shaft streaks, lores grizzled blackish-brown and greyish-buff; crown blackish-brown, dull buff shaft spotting on forehead becoming



streaking on crown; vague collar dark brown with faint buff shaft streaks; back rich dark brown, hint of pale shaft streaks on upper back, blending to slightly redder rump; uppertail-coverts reddish-brown; wings mainly rich dark rufescent brown; tail slightly graduated, shafts slightly stiffened basally, nearly rounded tips, dark chestnut-brown; throat and malar area tawny-buff with dark brownish streaking intensifying posteriorly, pattern continues into upper breast, where streaking "reverses" and becomes restricted to narrow buff shaft streaks; rest of breast and belly rich rufescent brown, flanks darker, undertail-coverts dark reddish-brown; iris dark brown; bill black; tarsus and toes greenish-grey to blackish (source of variation unknown). Sexes alike. Juvenile almost lacks throat markings. Race *sumaco* has crown streaks evidently extending to nape, is less rufous on wing-coverts, outer webs of primaries and underparts, especially undertail-coverts, bill much shorter; *scelateri* is like nominate, but has duller, more olive (less rufous) back, paler and less extensive rufous on rump; *magdalenae* is most similar to previous, but has less conspicuous throat markings, slightly more olivaceous upperparts, brighter, more golden underparts, shorter bill; *klagesi* has but crown greyer than nominate and with more conspicuous pale streaks, back slightly paler, rufous of rump and tail lighter, hint of pale supercilium, throat more heavily marked blackish, substantially shorter bill; *tachirensis* is similar to last but darker, more ochraceous, below, dusky wash on breast, darker, more brownish (less yellowish) back, darker and less reddish rump and uppertail-coverts. Voice. Song described as series of emphatic notes, "chup, cheyp-cheyp-cheyp-cheyp...". Call a fast, sharp "ch-di-dit", "chi-dik" or "ju-dut", repeated at intervals of several seconds; alarm a nasal "jwick".

**Habitat.** Montane evergreen forest, locally ranging into second growth. Mostly 1300-2100 m, occasionally to 2500 m; down to 900 m on Pacific slope of W Andes in SW Colombia.

**Food and Feeding.** Invertebrates; also, an *Anolis* lizard recorded, and other small vertebrates may also be taken. Forages singly or in pairs, rarely to occasionally in mixed-species flocks, mainly in understorey. Gleans and probes mossy branches and debris in dense undergrowth.

**Breeding.** Active nests in Apr-Aug in W Colombia; nestlings in Jun in Ecuador. Presumably monogamous. Nest a shallow platform of rootlets placed in tunnel c. 0.6 m long excavated in dirt bank, nest-chamber c. 15 cm long and 10 cm high. One clutch documented, of 2 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout range. Occurs in Henri Pittier National Park, in Venezuela, and La Planada Nature Reserve, in Colombia.

**Bibliography.** Anon. (2003g), Bohórquez (2002), Chapman (1926), Collins *et al.* (1991), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Hilty (2003a), Hilty & Brown (1983, 1986), Marin & Carrión (1994), Meyer de Schauensee (1945), Miller (1963), Pearman (1994c), Phelps & Phelps (1958), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salaman (1994), Stotz *et al.* (1996), Willis & Schuchmann (1993).

## 212. Flammulated Treehunter

### *Thripadectes flammulatus*

**French:** Anabate flammé **German:** Streifenbaumpäher **Spanish:** Trepamusgos Flamulado

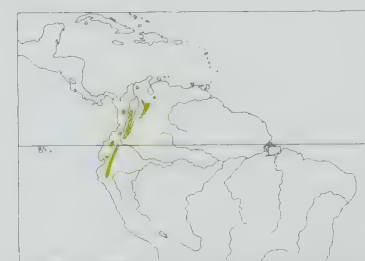
**Taxonomy.** *Anabates flammulatus* Eyton, 1849, New Grenada = "Bogotá", Colombia.

Forms a superspecies with *T. scrutator*, and suggested by some authors as being possibly conspecific. Two subspecies recognized.

#### Subspecies and Distribution.

*T. f. bricenoi* Berlepsch, 1907 - Andes of W Venezuela (Mérida).

*T. f. flammulatus* (Eyton, 1849) - Santa Marta Mts (NE Colombia) and Andes of SW Venezuela (Táchira), Colombia (W Andes from Antioquia S to Cauca, C range, E range from Norte de Santander S to Cundinamarca), Ecuador (but on W slope S only locally to Azuay) and extreme N Peru (Piura, Cajamarca).



**Descriptive notes.** 24-25 cm; 50-62 g. The largest and most strikingly patterned *Thripadectes*. Nominative race has lores speckled blackish and golden buff, face and crown blackish with sharply defined tawny-buff streaks, these more golden on crown; back similar but browner, with blackish restricted to margins of shaft streaks, blending to rich medium brown rump; uppertail-coverts dark reddish-brown; wing-coverts like back but more rufescent, streaks narrower, remiges dark rufescent brown; tail graduated, shafts stiffened basally, slightly pointed tips, dull chestnut-brown; throat, breast and upper belly streaked

golden buff and blackish, streaks fading into rich brown lower belly and flanks; undertail-coverts streaked dark rufous-brown and blackish; iris brown to dark brown; bill black; tarsus and toes blackish to grey-brown. Sexes alike. Juvenile is less distinctly streaked. Race *bricenoi* is generally paler than nominate, with throat almost uniform buff, underparts margined with olive-brown, not black, undertail-coverts ochraceous, not rufous, shaft streaks on upperwing-coverts broader and more conspicuously edged blackish. Voice. Song described as a series of grating notes that start as a stutter, then accelerates and becomes louder, c. 2 seconds long, repeated at intervals of 3-5 seconds; contact call an emphatic sharp "check", similar to notes of song.

**Habitat.** Montane evergreen forest, especially in or near *Chusquea* bamboo thickets; mostly 2200-3500 m, locally down to 800 m on Pacific slope of W Andes in Colombia.

**Food and Feeding.** Arthropods, presumably also small vertebrates. Forages usually singly, rarely to occasionally in mixed-species flocks, in dense undergrowth. Food items obtained by gleaning, presumably from moss, branches and debris, but substrate use not well known.

**Breeding.** Presumably monogamous. Nest in tunnel excavated in dirt bank. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon in general. Not well known. Occurs in Podocarpus National Park and Pasochoa Forest Reserve, in Ecuador.

**Bibliography.** Cory & Hellmayr (1925), Cuervo & Delgado (2001), Cuervo *et al.* (2003), Fjeldså & Krabbe (1990), Hilty (1985, 2003a), Hilty & Brown (1986), Olivares (1969), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Phelps & Phelps (1958), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994),



Rodner *et al.* (2000), Salaman (1994), Salaman, Donegan & Cuervo (1999), Salaman, Stiles *et al.* (2002), Stotz *et al.* (1996).

## 213. Rufous-backed Treehunter

### *Thripadectes scrutator*

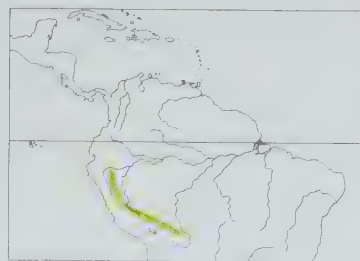
**French:** Anabate inca **German:** Braunrücken-Baumspäher **Spanish:** Trepamusgos Peruano  
**Other common names:** Peruvian/Buf-throated/Taczanowski's Treehunter

**Taxonomy.** *Thripadectes scrutator* Taczanowski, 1874, Maraynioc, Junin, Peru.

Forms a superspecies with *T. flammulatus*, and suggested by some authors as being possibly conspecific. Some specimens from S Peru (Cuzco) and Bolivia (Cochabamba) more reddish rufescent than those farther N, perhaps representing undescribed race. Monotypic.

**Distribution.** Andes, from N Peru (Amazonas) S to NC Bolivia (Cochabamba).

**Descriptive notes.** 23-24 cm; 56-61g. Rather large *Thripadectes*, looking like a washed-out, less streaked version of *T. flammulatus*. Has blackish face with sharply defined tawny-buff streaks, lores speckled blackish and golden buff; crown, side of neck and upper back blackish with broad dull tawny shaft streaks, these becoming brighter posteriorly; rest of back rich brown with faint pale rufous shaft streaks, blending to rusty-brown rump; uppertail-coverts reddish-chestnut; wing-coverts reddish-brown, remiges paler, chestnut-rufous; tail graduated, shafts stiffened basally, slightly pointed tips, dull chestnut-brown; throat dull buff with blackish streaks, blending to upper breast with blacker and bright tawny-buff streaks; rest of breast, belly and flanks medium brown with golden-buff shaft streaks, these fading posteriorly, undertail-coverts ochraceous rufous with paler



not well known.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon throughout range. Poorly known species, and difficult to locate. Whether apparent gap in its range is real or is result of a lack of observations is unknown. Occurs in Machu Picchu Historical Sanctuary, in Peru, and Ulla Ulla Reserve, in Bolivia.

**Bibliography.** Cory & Hellmayr (1925), Fjeldsá & Krabbe (1990), Graves (1985), Parker *et al.* (1982), Remsen (2003a), Remsen & Ridgely (1980), Remsen & Traylor (1989), Ridgely & Tudor (1994), Stotz *et al.* (1996), Walker (2001).

streaks; iris brown to dark brown; bill black; tarsus and toes grey to brown. Sexes alike. Juvenile undescribed. **VOICE.** Inadequately documented; song (and possibly calls) similar to that of *T. flammulatus*.

**Habitat.** Montane evergreen forest and elfin forest, often with *Chusquea* bamboo; 2450-3200 m.

**Food and Feeding.** Invertebrates, presumably also some small vertebrates; a spiral snail recorded as taken. Forages usually singly, rarely in mixed-species flocks, in dense undergrowth. Items obtained by gleaning, presumably from moss, branches and debris, but substrate use





*ssp ochrolaemus*

214

*ssp pallidigularis*

*ssp infuscatus*

*ssp cervicalis*

215

*ssp paraensis*

*ssp auricularis*

216

217

*ssp duidae*

218

*ssp roraimae*

*ssp rubiginosus*

219

*ssp rufipectus*

*ssp nigricauda*

*ssp rufipileatus*

220

*ssp obscurus*

*ssp watkinsi*

*ssp consobrinus*

222

221

PLATE 28

inches

cm

4

10



# Genus *AUTOMOLUS* Reichenbach, 1853

## 214. Buff-throated Foliage-gleaner

### *Automolus ochrolaemus*

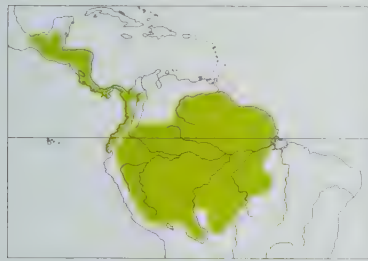
**French:** Anabate à gorge fauve **German:** Fahlkehl-Baumspäher **Spanish:** Ticotico Gorgielaro  
**Other common names:** Buff-throated Leaf-gleaner/Automolus

**Taxonomy.** *Anabates ochrolaemus* Tschudi, 1844, Peru.

Vocal differences described for race *exsertus* and perhaps others suggest that more than one species may be involved; *pallidigularis* considered a separate species by some authors. Populations from Belize may show signs of intergradation between *cervinigularis* and *hypophaeus*; proposed race *amusos* described (from Honduras) as paler than latter, but considered not diagnosable. Some signs of introgression between *auricularis* and nominate in W Brazil. Seven subspecies recognized.

#### Subspecies and Distribution.

*A. o. cervinigularis* (P. L. Slater, 1857) - Caribbean lowlands of S Mexico (Veracruz and S from S Quintana Roo), Guatemala and W Belize.  
*A. o. hypophaeus* Ridgway, 1909 - Honduras S to NW Panama.  
*A. o. exsertus* Bangs, 1901 - Pacific slope of SW Costa Rica and W Panama.  
*A. o. pallidigularis* Lawrence, 1862 - E Panama, N & W Colombia (E to Magdalena Valley in N) and NW Ecuador (S to W Guayas and Los Rios).  
*A. o. turdinus* (Pelzelin, 1859) - SE Colombia (S from W Meta and Vaupés), S Venezuela (Amazonas, Bolívar) and the Guianas S to E Ecuador, NE Peru and N Brazil (N of R Amazon).  
*A. o. ochrolaemus* (Tschudi, 1844) - S of R Amazon, from E Peru and W Brazil (E to left bank of R Purús) S to C Bolivia (W Pando S to NW Santa Cruz).  
*A. o. auricularis* J. T. Zimmer, 1935 - C Brazil (from right bank of R Purús E to E Pará) S to NE Bolivia (E Pando, NE Santa Cruz).



**Descriptive notes.** 18-19 cm; 30-46 g. Fairly large, rather plain foliage-gleaner. Nominate race dark brownish face with faint flammulations on auriculars, bold buff eyering; crown and nape dark brown with faint blackish-brown scalloping; back and rump rich dark brown, blending to dark chestnut uppertail-coverts; wing-coverts rich dark brown, remiges slightly paler, more rufescent; tail rounded, rectrices with tips mostly rounded, dark chestnut; throat deep buff, malar area slightly more ochraceous and with faint dark flecks; breast with vague streaking medium brown and ochraceous buff, fading posteriorly; belly brown, flanks darker,

more rufescent brown, undertail-coverts dull chestnut; iris brown to dark brown; upper mandible blackish-horn to grey to horn-brown, lower mandible horn to greenish-buff to grey; tarsus and toes olive, greenish-brown or greenish-grey. Sexes alike. Juvenile is slightly duller, with eyering less distinct, crown tinged chestnut, face tinged rufous, throat and breast slightly mottled. Race *auricularis* is larger and duller than nominate, back more greyish-olive, underparts paler, dark feather margins in centre of breast much reduced; *turdinus* has paler throat (almost whitish centre of chin), slightly less ochraceous underparts, differs from previous in darker underparts with more markings, brighter undertail-coverts; *pallidigularis* is the most distinctive, palest and duller, with nearly white throat, dull brown underparts no trace of ochraceous tinge; *hypophaeus* is very similar to distant *turdinus*, differs primarily in darker ochraceous throat, paler breast, brighter rufous undertail-coverts; *exsertus* is like last but duller, less ochraceous and more uniform below; *cervinigularis* is darkest and most richly coloured, with crown blackish, throat brighter, deeper ochraceous. Voice. Song in South America a descending series of nasal notes, "kee-kee-kr-kr", "jee, jee, ju-ju-ja" or "ki, ki, ke-ke-kukukrrr"; in Costa Rica, a loud, harsh rattle lasting 2-5 seconds, repeated 10-30 times per minute (Pacific *exsertus*), but in Caribbean lowlands (*pallidigularis*) described as sharper, higher and faster, decelerating and fading at end, with unusual nasal quality; in Mexico (*cervinigularis*), as descending rattle 1-1.5 seconds long, repeated frequently. Call of *pallidigularis* described as nasal "rack", of *cervinigularis* as low gruff "chuk", sharp nasal "pe-duk" and hard "tchehr"; alarm call is loud descending rattle.

**Habitat.** Tropical lowland evergreen forest, tall second growth and coffee plantations in Middle America; in Amazonia, primarily transitional and seasonally flooded forest and swamp-forest, or in large, old treefall gaps in *terra firme*; also in lower montane forest in Guyana (*turdinus*); primarily in second growth in W Ecuador (*pallidigularis*). Mostly from near sea-level to 1000 m; locally to 1400 m in Andes and to 1650 m in Middle America.

**Food and Feeding.** Diet primarily Orthoptera, Coleoptera, spiders, and Heteroptera; Dermaptera, ants, small frogs and small lizards (*Anolis limifrons*) also recorded. Forages singly or in pairs, often or usually in mixed-species flocks; from understorey, usually dense, to lower mid-storey, occasionally on ground. Hops and clambers along branches. Acrobatically gleans and pulls arthropods and small vertebrates from dead leaves, epiphytes (including bromeliads) and debris. Dead-leaf specialist; at one site in SE Peru, 94% of observed foraging manoeuvres were directed at dead leaves. In Middle America also feeds occasionally on ground, by flaking leaf litter.

**Breeding.** Season Feb-May in Costa Rica, eggs Mar-May. Monogamous. Nest a broad, shallow cup of a single type of plant fibre (usually rachides of compound leaves) placed in expanded chamber at end of horizontal tunnel c. 40-75 cm long, excavated in dirt bank; estimated territory size 11 ha in transitional forest in SE Peru. Clutch 2-3 eggs; incubation shared by both sexes, period 20-21 days; chicks fed by both members of pair, nestling period c. 18 days.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Common to fairly common in most of its range. Density estimated to be 3-4 birds/km<sup>2</sup> at two sites in French Guiana. Present in fragmented forests.

**Bibliography.** Aleixo *et al.* (2000), Anon. (1998a), Binford (1989), Cory & Hellmayr (1925), Figueroa *et al.* (1998), Foster *et al.* (1994), Gyldestolpe (1945a, 1945b, 1951), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Howell, S.N.G. & Webb (1995a), Howell, T.R. (1957), Marín & Carrión (1991), Meyer de Schauensee

(1945), Monroe (1968), Munn (1985), Novaes (1990), Olivares (1969), Parker & Bailey (1991), Parker, Foster *et al.* (1993), Parker, Holst *et al.* (1994), Parker, Parker & Plenge (1982), Pinto (1978), Remsen (2003a), Remsen & Parker (1984), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Robbins *et al.* (1985), Robinson, S.K. & Terborgh (1995, 1997), Robinson, S.K. *et al.* (1990), Robinson, W.D. *et al.* (1999), Rodner *et al.* (2000), Rosenberg (1997), Russell (1964), Salaman *et al.* (1999), Schulenberg (2002), Schulenberg *et al.* (2001), Sick (1993, 1997), Skutch (1952, 1969c, 1985), Slud (1960, 1964), Snyder (1966), Stiles (1985), Stiles & Skutch (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh *et al.* (1984), Thiollay (1986), Todd (1948b), Tostain *et al.* (1992), Wetmore (1943, 1972), Winker *et al.* (1994), Zimmer (1935a).

## 215. Olive-backed Foliage-gleaner

### *Automolus infuscatus*

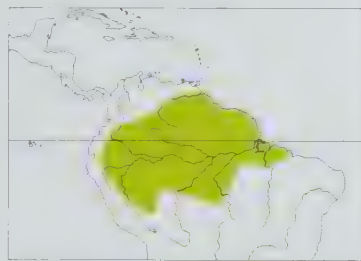
**French:** Anabate olivâtre **German:** Olivrücken-Baumspäher **Spanish:** Ticotico Oliváceo  
**Other common names:** Para Foliage-gleaner (*paraensis*)

**Taxonomy.** *Anabates infuscatus* P. L. Slater, 1856, eastern Peru.

Forms a superspecies with *A. leucophthalmus*, as suggested by voice, plumage pattern and biogeography. Recent study shows that race *paraensis* is vocally distinct, and should be treated as a separate species. Races S of R Amazon significantly larger in measurements than those N of it, but none is diagnosable by biometrics alone. Five subspecies currently recognized.

#### Subspecies and Distribution.

*A. i. infuscatus* (P. L. Slater, 1856) - SE Colombia (S from S Meta and E Guainia), E Ecuador, E Peru and N Bolivia (W Pando, extreme N La Paz).  
*A. i. badius* J. T. Zimmer, 1935 - E Colombia (Vichada), S Venezuela (W Bolívar, Amazonas) and NW Brazil (E, N of R Amazon, to lower R Negro).  
*A. i. cervicalis* (P. L. Slater, 1889) - E Venezuela (E Bolívar), the Guianas and N Brazil (lower R Negro E to Amapá).  
*A. i. purusianus* Todd, 1948 - W Brazil S of Amazon (E to, presumably, left bank of R Madeira).  
*A. i. paraensis* Hartert, 1902 - NC Brazil (from right bank of R Madeira E to Maranhão, S to Rondônia and N Mato Grosso).



**Descriptive notes.** 18-19 cm; 28-42 g. Rather plain, dark foliage-gleaner with striking white throat. Nominate race has blackish-brown face, inconspicuous dull buff flammulations on auriculars, lores grizzled blackish-brown and buff; forehead blackish-brown with inconspicuous broad rufescent brown shaft streaks, blending to dark brown crown with faint streaks, faint blackish scalloping on hind-crown; vague collar dark brown with faint light brown shaft streaks; back and rump rich dark olivaceous brown, blending to dark reddish-brown uppertail-coverts; wing-coverts rich dark brown, slightly darker primary coverts,

slightly paler remiges tinged rufescent, dull buff bend of wing; tail slightly rounded, rectrices with tips mostly rounded, dark reddish-chestnut; throat, malar area and side of neck white, blending to whitish centre of breast faintly washed grey, becoming buffy posteriorly and blending to light buff-brownish buff; side of breast broadly dark olive-brown, blending to more rufescent brown flanks; undertail-coverts light brown; iris dark brown to light brown or hazel; upper mandible black to dark olive-horn, lower mandible olive-horn to grey to pale brown; tarsus and toes greyish-green to yellowish-olive. Differs from similar *A. leucophthalmus* in less rufescent coloration throughout, shorter bill on average, dark eyes. Sexes alike. Juvenile is slightly darker and duller, crown feathers shorter. Race *paraensis* is like nominate but crown duller, slightly more greyish, with broader dark margins producing more scalloped look, tail darker rufous than others; *purusianus* differs from previous in having more rufescent, less olivaceous, underparts, especially forehead (thus approaching nominate in rufescent coloration); *cervicalis* has crown and hindneck more rufescent and with reduced dark edging, thus contrasting more with back, also flanks slightly more brownish; *badius* has lower breast and belly greyer than other races, differs from previous in having richer, redder brown back (reddest of any race), darker crown, duller underwing-coverts. Voice. Song a loud, fast, staccato, slightly descending rattle, "tchi-r-r-r-r-r-r-r-r-r-r-r-r-r-r", c. 2-3 seconds long (c. 1 second in *badius* and *cervicalis*), c. 18-22 notes per second; *paraensis* song differs from all others in being much slower, of 4-10 notes, the first different and longer than rest, "jueet-reet-reet-reet", with quality of grating laugh, lasts 1-1.5 seconds. Contact/alarm call a sharp "chik-uh" or "chik-wuk", first note higher-pitched than second, sometimes just single "chik"; analogous call of *badius* and *cervicalis* slower and differing in tone, more *Synallaxis*-like, "chik-gwaah"; in contrast, that of *paraensis* a single, liquid "quip" or "queep".

**Habitat.** Tropical lowland evergreen forest, mainly *terra firme* and transitional forest, locally in *várzea* and in second-growth forest; from near sea-level to 700 m.

**Food and Feeding.** Diet primarily Orthoptera, Coleoptera, spiders; Heteroptera, Lepidoptera larvae and pupae, and small lizards also recorded. Forages singly or in pairs, usually in mixed-species flocks, in undergrowth, occasionally to mid-storey, rarely to subcanopy. Acrobatically gleans and pulls arthropods from dead leaves, debris, and occasionally bark crevices and epiphytes. Dead-leaf specialist; in SE Peru, 88% of observed foraging manoeuvres at one site and 71% at another were directed at dead leaves.

**Breeding.** Active nest in Mar in French Guiana; fledgling in Dec in C Brazil. Presumably monogamous. Nest a broad, shallow cup of plant fibres, often rachides of compound leaves, placed at end of tunnel 2 m long excavated in dirt bank; estimated territory size 12 ha in transitional forest in SE Peru. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Common to fairly common in most of its range. Density estimated at 3-12 birds/km<sup>2</sup> in transitional forest in SE Peru and 9-21/km<sup>2</sup> at four *terra firme* sites in French Guiana; densities probably higher in *terra firme* forest in W Amazonia. Occurs in numerous protected areas, e.g. Tambopata-Candamo Reserved Zone and Manu National Park and Biosphere Reserve, in Peru, and Cristalino State Park, in Brazil. Persists in relatively small forest fragments.



**Bibliography.** Borges & Stouffer (1999), Cadena, Álvarez *et al.* (2000), Cory & Hellmayr (1925), Foster *et al.* (1994), Graves & Zusi (1990), Gyldenstolpe (1951), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Koepeke (1972), Munn (1985), Novaes (1961a, 1990), Oniki & Willis (1983a), Oren (1990), Parker & Bailey (1991), Parker & Remsen (1987), Parker, Castillo *et al.* (1991), Parker, Foster *et al.* (1993), Parker, Parker & Plenge (1982), Pinto (1953, 1978), Remsen (2003a), Remsen & Parker (1984), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1995, 1997), Robinson *et al.* (1990), Rodner *et al.* (2000), Rosenberg (1997), Schubart *et al.* (1965), Schulenberg *et al.* (2001), Sick (1993, 1997), Sneath (1935), Snyder (1966), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1986, 1988a, 1988b, 1994), Todd (1948b), Tostain *et al.* (1992), Willard *et al.* (1991), Zimmer, J.T. (1930, 1935a), Zimmer, K.J. (2002).

## 216. White-eyed Foliage-gleaner

### *Automolus leucophthalmus*

**French:** Anabate aux yeux blancs

**Spanish:** Ticotico Ojiblanco

**German:** Weißaugen-Baumspäher

**Taxonomy.** *Anabates leucophthalmus* Wied, 1821, Rio Cachoeira, Bahia, Brazil.

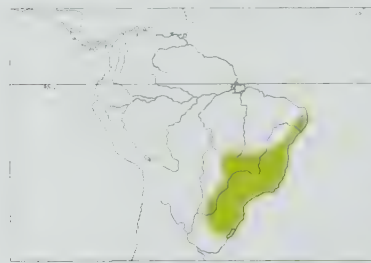
Forms a superspecies with *A. infuscatus*, as suggested by voice, plumage pattern and biogeography. Race *lammi* more similar vocally to race *paraensis* of that species than to other races of present species. Race *sulphurascens* varies clinally, with populations in more humid areas darker and those in drier interior paler. Proposed race *bangsi*, from Bahia (Brazil), regarded as a synonym of nominate, following initial confusion over type locality of latter. Three subspecies recognized.

#### Subspecies and Distribution.

*A. l. lammi* J. T. Zimmer, 1947 - E Brazil (Paraíba, Pernambuco).

*A. l. leucophthalmus* (Wied, 1821) - E Brazil (E Bahia).

*A. l. sulphurascens* (M. H. K. Lichtenstein, 1823) - SC & SE Brazil (E Mato Grosso, S Goiás and S Bahia S to Rio Grande do Sul), E Paraguay and NE Argentina (Misiones).



**Descriptive notes.** 19-20 cm; 25-35 g. Rather plain, dark rufescent foliage-gleaner with striking white throat. Nominative race has dark brownish face, faint rufescent shaft streaks on auriculars, lores grizzled reddish-brown and buffy; crown dark reddish-brown with narrow rufous shaft streaks; back and rump dark reddish-brown, blending to bright rufous upper-tail-coverts; wings dark rufous, pale cinnamon bend of wing; tail slightly rounded, rectrices mostly rounded with slight points, bright rufous; throat, malar area and side of neck white, blending to whitish centre of upper breast, becoming bright buffy posteriorly and to belly;

broad area on side of breast and flanks conspicuously ochraceous tawny; undertail-coverts light rufous; iris whitish; upper mandible brownish to black, lower mandible greenish-grey to light grey; tarsus and toes greyish. Differs from similar *A. infuscatus* in more rufescent coloration throughout, longer bill on average, white eyes. Sexes alike. Juvenile has more uniform crown and back, shorter crown feathers, darker brown sides and flanks, slightly darker breast and belly. Race *lammi* is like nominate, but upperparts darker and browner, less rufescent, throat tinged pale yellow and more sharply demarcated from breast, breast more creamy olive-buff, sides browner, less rufescent, flanks and undertail-coverts less tawny, bill darker, wing longer (some overlap); *sulphurascens* has back, rump and tail paler, flanks less extensively reddish-brown, belly less brownish (plumage becoming darker in more humid areas, paler in drier interior of range). Voice. Song a loud, vigorous, fast series of c. 5 squeaky, syncopated "ki-dee" or "tu-wút" notes; call "téh-koeé". Race *lammi* song slower and more grating, call more liquid, voice more like that of race *paraensis* of *A. infuscatus*. **Habitat.** Tropical lowland evergreen forest, also tall second growth; from near sea-level to 1000 m, locally to c. 1400 m.

**Food and Feeding.** Recorded food items are Coleoptera (including families Erotylidae, Melolonthidae, Chrysomelidae), Orthoptera (Tettigoniidae, Locustidae), Hemiptera, Dermaptera, and Diptera pupae; on one occasion photographed carrying a snail in bill. Usually observed in mixed-species flocks, especially those with Lesser Woodcreeper (*Xiphorhynchus fuscus*) and Red-crowned Ant-tanager (*Habia rubica*); mainly in understorey, occasionally to mid-storey. Gleans and pulls arthropods from dead leaves and debris, mainly in dense undergrowth.

**Breeding.** Season presumably during austral spring-summer; eggs in Oct and Jan in Brazil. Presumably monogamous. Nest a broad, shallow cup c. 8 cm in diameter made of dry plant stems, often rachides of compound leaves, also some hair, placed at end of horizontal tunnel c. 60 cm long excavated in dirt bank, nest-chamber c. 20 cm in diameter. Clutch 3-4 eggs.

#### Movements.

Resident.

**Status and Conservation.** Not globally threatened. Uncommon to common. In Brazil, common in Augusto Ruschi Biological Reserve and Itatiaia and Iguaçu National Parks; fairly common in Sooretama Biological Reserve and Serra dos Órgãos National Park, uncommon in Tijuca and Serra da Canastra National Park, and rare in Poço das Antas Biological Reserve. In Paraguay, common in Caaguazú and Ybicuí National Parks, uncommon in Cerro Corá National Park, and present in San Rafael National Park. Fairly common in Iguazú National Park, in Argentina. Extensive deforestation within its range has dramatically reduced area of habitat available to this species, but it persists in small and degraded forest fragments. Race *lammi* almost certainly merits conservation status of threatened; it occurs in perhaps only two areas with official protection, i.e. Mucici Ecological Reserve and Pedra Talhada State Park. Nominative race, known from few localities in Bahia, likewise deserves threatened status.

**Bibliography.** Aleixo (1997), dos Anjos *et al.* (1997), Anon. (2003d), Belton (1984), Brooks *et al.* (1993), Cândido (2000), Caneyari *et al.* (1991), Cory & Hellmayr (1925), Euler (1900), Ferreira de Vasconcelos & Melo-Júnior (2001), Hayes (1995), Hayes & Scharf (1995a, 1995b), Kratter & Parker (1997), Madroño, Robbins & Zyskowski (1997), Marini, Moita-Júnior *et al.* (1997), Mazar Barnett & Pearman (2001), Melo-Júnior *et al.* (2001), Narosky *et al.* (1983), Novaes (1961a), Olog (1963a), Parker & Goerck (1997), de la Peña (1988), Pinto (1978), Piratelli *et al.* (2000), Ridgely & Tudor (1994), Schubart *et al.* (1965), Scott & Brooke (1985), Sick (1993, 1997), Silveira (1998), Stotz *et al.* (1996), Terborgh *et al.* (1990), Zimmer, J.T. (1947), Zimmer, K.J. (2002).

## 217. Brown-rumped Foliage-gleaner

### *Automolus melanopezus*

**French:** Anabate brunâtre

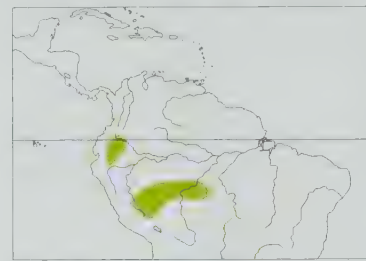
**German:** Orangekehl-Baumspäher

**Spanish:** Ticotico Pardo

**Taxonomy.** *Anabates melanopezus* P. L. Slater, 1858, Rio Napo, Ecuador.

No obvious sister-species in genus. Although the N and S populations are evidently separated geographically, no appreciable phenotypic difference between them is evident. Monotypic.

**Distribution.** SE Colombia (W Putumayo), E Ecuador and N Peru (Amazonas, N Loreto); separate population in SE Peru (S Ucayali, Cuzco, Madre de Dios), W Brazil (SW Amazonas, Acre, N Rondônia) and N Bolivia (W Pando).



**Descriptive notes.** 16-18 cm; 27-32 g. A rather plain, smallish *Automolus*. Has face mostly rich dark brown, hint of paler shaft streaks on auriculars, lores grizzled brownish and greyish; crown rich brown, some faint paler shaft spotting on forehead; back and rump rich brown, blending to chestnut-tinged uppertail-coverts; wing-coverts dark reddish-brown, remiges slightly more rufescent, dull ochraceous bend of wing; tail slightly rounded, rectrices with tips almost rounded, dull reddish-brown; throat dull tawny-buff, blending to more ochraceous malar area and light brown breast and belly; sides and flanks broadly

darker brown, tinged rufescent on lower flanks, undertail-coverts pale rufescent brown; iris dark red to orange (source of variation uncertain); upper mandible dark greyish to blackish, sometimes pale tip, lower mandible pale grey to greyish-brown; tarsus and toes olive-grey to greenish-grey. Sexes alike. Juvenile has darker, browner underparts, narrow dark margins on feathers of crown, breast and belly, paler throat, brown iris. Voice. Song a fast, rhythmic "whip, whip, whudididit-wrrrrrr", or staccato burst of upward-inflected notes, "whe-de-de-de-de-de", slightly descending at end; lasts c. 1-1.5 seconds.

**Habitat.** Tropical evergreen forest, mainly floodplain-forest, primarily in or in vicinity of *Guadua* bamboo thickets; mostly 300-500 m, locally to 600 m.

**Food and Feeding.** Diet primarily Orthoptera, Coleoptera, Heteroptera, and spiders; small tree-frogs also recorded. Regularly observed in mixed-species flocks, foraging in dense undergrowth to lower mid-storey. Acrobatically gleans and pulls arthropods from dead leaves and debris. At one site in SE Peru, c. 45% of observed foraging attempts were in bamboo, directed primarily at dead leaves; more than 90% of all foraging involved searching of dead leaves.

**Breeding.** No information.

#### Movements.

Resident.

**Status and Conservation.** Not globally threatened. Rare to uncommon in all parts of range. Occurs in Manu National Park and Biosphere Reserve.

**Bibliography.** Angehr & Aucca (1997), Cory & Hellmayr (1925), Foster *et al.* (1994), Hilty & Brown (1986), Kratter & Parker (1997), Parker (1982), Parker & Remsen (1987), Parker *et al.* (1982), Pinto (1978), Remsen (2003a), Remsen & Parker (1983, 1984), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson *et al.* (1990), Rosenberg (1997), Sick (1993, 1997), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh *et al.* (1984), Todd (1948b).

## 218. White-throated Foliage-gleaner

### *Automolus roraimae*

**French:** Anabate à gorge blanche **German:** Tepuibaumspäher **Spanish:** Ticotico Gorgiblanco  
**Other common names:** Tepui Foliage-gleaner; Neblina Foliage-gleaner ("*Philydor hylobius*")

**Taxonomy.** *Automolus roraimae* Hellmayr, 1917, Mt Roraima, Bolívar, Venezuela.

Species was originally described in the genus *Philydor*, as *P. albigularis*, but that name preoccupied. Suspected by some authors to be possibly better returned to that genus, whereas others consider that it is most closely related to *A. ochrolaemus* or even to *Syndactyla ruficollis*; further research needed. Named form *Philydor hylobius*, previously believed by some to be an isolated population of *P. atricapillus*, is invalid; represents the juvenile plumage of present species. Sight records from W Guyana presumed to pertain to nominate race. Four subspecies recognized.

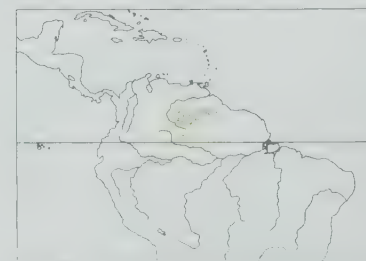
#### Subspecies and Distribution.

*A. r. paraquensis* Phelps, Sr. & Phelps, Jr., 1947 - Cerro Paraque, in SC Venezuela (NW Amazonas).

*A. r. duidae* Chapman, 1939 - SC Venezuela (Cerro Duida, Neblina, Huachamacari and Yavi, and Serranía Parí, in Amazonas) and extreme N Brazil in Amazonas (Cerro Neblina) and Roraima (Serra Parima).

*A. r. urutani* Phelps, Jr. & Dickerman, 1980 - Cerros Urutani, Jaua and Sarisariñama, in SE Venezuela (S Bolívar).

*A. r. roraimae* Hellmayr, 1917 - SE Venezuela (SE Bolívar on Mt Roraima, tepuis of Gran Sabana area), W Guyana (Potaro Plateau, Mt Roraima) and extreme N Brazil (Mt Roraima).



**Descriptive notes.** 18 cm; 22-32 g. Smallest *Automolus* and with the most striking face pattern. Nominative race has conspicuous white supercilium, rest of face blackish-brown; crown dark greyish-brown, back rich dark rufescent brown, rump and uppertail-coverts chestnut-rufous; wing-coverts mostly rich dark rufescent brown, darker brown primary coverts, slightly more rufescent remiges; tail slightly rounded, chestnut-rufous; throat and malar area white; breast and belly medium brown, flanks and undertail-coverts darker brown; iris brown to dark brown; upper mandible black, lower mandible pinkish-grey to

silver to black with pinkish-coloured base; tarsus and toes olive-yellow to greenish-grey. Sexes alike. Juvenile has supercilium ochraceous, underparts more rufous, dusky-tipped feathers on breast and belly. Race *paraquensis* differs from nominate in having paler and more yellowish-brown (less rufous) back, paler and more greyish-olive breast and belly; *duidae* is described as like nominate but with more rufescent crown and underparts, much brighter belly; *urutani* is generally paler, less rufous above and less ochraceous below, than previous, with paler flanks and undertail-coverts. Voice. Song a long accelerating series of very harsh guttural "jiza" notes, rising in pitch, usually preceded by a few single short notes; call a short, harsh "chek" or "tzik".

**Habitat.** Montane evergreen forest, ranging into stunted woodland; mostly 1100-2475 m.

**Food and Feeding.** Recorded dietary items include Coleoptera and Orthoptera. Forages singly, in pairs or in small family parties, often in mixed-species flocks; mostly in understorey, occasionally to mid-storey. Generally moves around low in undergrowth, less often clammers in vine tangles;



sometimes hitches along limbs and even up vertical trunks (unlike others of genus). Gleans and probes for arthropods; peers at dead leaves, live leaves, branches and moss; occasionally hangs upside-down.

**Breeding.** In Guyana, in Mar-Apr, gonad condition indicated recent breeding. No further information. **Movements.** Resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Tepuis EBA. Uncommon to locally common. Present in Canaima National Park, in Venezuela.

**Bibliography.** Anon. (2003d), Barnett *et al.* (2002), Braun *et al.* (2003), Chapman (1931, 1939), Cory & Hellmayr (1925), Dickerman *et al.* (1986), Hilty (2003a), Lentino *et al.* (1998), Mayr (1971), Mayr & Phelps (1967, 1971), Phelps, W.H. & Phelps (1947), Phelps, W.H. Jr. & Dickerman (1980), Pinto (1978), Renjifo *et al.* (1997), Ridgely & Tudor (1994), Rodner *et al.* (2000), Sick (1993, 1997), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wetmore & Phelps (1956), Willard *et al.* (1991).

219. Ruddy Foliage-gleaner

*Automolus rubiginosus*

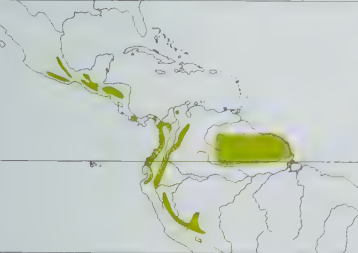
**French:** Anabate rubiginoux    **German:** Zimtkehl-Baumspäher    **Spanish:** Ticotico Castaño  
**Other common names:** Ruddy Leaf-gleaner

**Taxonomy.** *Anabates rubiginosus* P. L. Selater, 1857, Córdoba, Veracruz, southern Mexico. No obvious sister-species in genus. Vocal and substantial morphological differences between Guianan Shield race *obscurus* and other races suggest that at least two species are involved; vocalizations of many of the distinctive races are unknown. Black-tailed races *nigricauda* and *saturatus* formerly considered to represent a separate species. Proposed race *umbrinus*, described (from Guatemala) as like nominate but paler and redder above and paler below, considered to be not reliably distinguishable from *veraepacis* and synonymized with it by most authors; in addition, that broader taxon thought by some to be possibly indistinguishable from nominate. Supposed characters of proposed race *moderatus*, described from single specimen from N Peru, evidently represent individual variation within highly variable *watkinsi*. Proposed species *A. xanthippe* (W Panama) considered a synonym of *fumosus*. Racial identity of birds in SW Venezuela (Apure) uncertain; tentatively assigned to *cinnamomeigula*. Recent specimens from Amazonian NE Peru (away from Andes) are small, and dark below, much like geographically distant *obscurus*; believed possibly to represent an undescribed taxon. Fourteen subspecies currently recognized.

**Subspecies and Distribution.**

- A. r. guerrensis* Salvin & Godman, 1891 - SW Mexico (Guerrero, W Oaxaca).
- A. r. rubiginosus* (P. L. Selater, 1857) - mountains of E Mexico (Veracruz).
- A. r. veraepacis* Salvin & Godman, 1891 - mountains from S Mexico (E Oaxaca, Chiapas) and Guatemala E to N Nicaragua.
- A. r. fumosus* Salvin & Godman, 1891 - mountains of extreme SW Costa Rica and W Panama (Chiriqui, San Blas).
- A. r. saturatus* Chapman, 1915 - highlands of extreme E Panama (Darién) and NW Colombia (Antioquia).
- A. r. rufipictus* Bangs, 1898 - Santa Marta Mts, in N Colombia.
- A. r. nigricauda* Hartert, 1898 - W Colombia (Baudó Mts, and foothills of W Andes) S to W Ecuador (S to El Oro) and narrowly to N Peru (Tumbes).
- A. r. sasaimae* Meyer de Schauensee, 1947 - E Andes of Colombia (W slope in Boyacá and Cundinamarca).
- A. r. cinnamomeigula* Hellmayr, 1905 - SW Venezuela (Apure) and foothills of E Colombian Andes (Meta).
- A. r. caquetae* Meyer de Schauensee, 1947 - foothills of E Andes in S Colombia (Nariño, Caquetá, Putumayo) and NE Ecuador (Sucumbios).
- A. r. brunnescens* Berlioz, 1927 - foothills from E Ecuador (S from Napo) S to NE Peru (Amazonas).
- A. r. watkinsi* Hellmayr, 1912 - Andean foothills from N Peru (San Martín) S to N Bolivia (La Paz), also extreme SW Brazil (Acre).
- A. r. venezuelanus* J. T. Zimmer & Phelps, Sr., 1947 - tepui region of S Venezuela (Bolívar, Amazonas).
- A. r. obscurus* (Pelzelin, 1859) - the Guianas and NE Brazil.

Also Amazonian NE Peru (away from Andes), where identity uncertain; possibly an undescribed taxon.



**Descriptive notes.** 17-20 cm; 43-52 g. *obscurus* 23-35 g. The darkest *Automolus*. Nominate race has dark reddish-brown face, faint paler flammulations on auriculars, lores duller, slightly paler; crown very dark brown with reddish tone, slightly darker feather margins producing faint scalloping; back dark reddish-brown, slightly paler than crown, rump dark brown, slightly paler than back; uppertail-coverts with dark reddish-brown tips; wings dark reddish-brown; tail slightly rounded, rectrices with somewhat rounded tips, dark reddish-brown; throat dark rufous, feathers tipped rufescent brown, blending to reddish-

brown breast with vague paler shaft spotting; belly rufescent brown, sides and flanks darker, undertail-coverts reddish-brown; iris dark brown to greyish-brown; upper mandible black to grey, lower mandible pinkish-grey to dusky horn, sometimes paler base or darker tip; tarsus and toes brown to greyish-olive. Sexes alike. Juvenile has paler, ochraceous throat and breast, breast with hint of scaling or streaking. Race *guerrensis* is much paler than nominate, upperparts and face medium brown, tail much paler (dark rufous), reddish below restricted to upper breast, rest of underparts paler; *veraepacis* is described as slightly paler generally than nominate; *fumosus* is like previous, but crown and back much darker, less tawny, wings darker, almost same colour as back, throat paler and more ochraceous, breast and belly olive-brown with only trace of rufescent tinge; *saturatus* is darker than other Middle American races, compared with nominate has crown and back slightly darker (less reddish), rump and uppertail-coverts much darker (same colour as back), wings much darker (less rufescent), tail slaty fuscous brownish, almost black, throat paler and more contrasting, lower breast and belly olive-brown, flanks and undertail-coverts dark brown, also juvenile throat distinctly paler than adult; *nigricauda* has blackish tail like last, but differs in being generally paler, with back paler than crown, flanks paler; *sasaimae* is described as like previous, but tail rufous, throat and upper breast rufous (not dark chestnut), lower breast and belly much paler, back tinged olivaceous, wing-coverts and primary edges rufous (not brown); *rufipictus* is much paler than last, has back medium brown, tail dark chestnut; *cinnamomeigula* is similar to previous, but auriculars dark olive (not rufous), underparts solid cinnamon-rufous except for buff-

rufous centre of belly; *watkinsi* is like last, but crown dark reddish-chestnut, chin and upper throat ochraceous, conspicuously paler than lower throat and malar area, belly medium olive-brown, flanks lacking rufescent tinge, but exceptional individual or local variation; *brunnescens* is uniform dark rufescent brown above, with throat and upper breast dark rufous, rest of underparts rufescent brown; *caquetae* differs from previous in having paler upperparts, chestnut of throat and breast paler (and less extensive on breast), belly and flanks much less rufescent; *obscurus* is substantially smaller than others, with smaller bill and feet, fairly dark, has throat and breast perhaps the reddest and darkest of any South American race, belly rufescent olive-brown; *venezuelanus* is like last, but crown, back and wings less rufescent, more olivaceous, and belly paler. **VOICE.** Call (possibly song) in Mexico a 2-noted, nasal "yeh-énk, yeh-énk", repeated 2-3 times; also gives dry chatter and slowly repeated "chack". Call in SW Costa Rica and W Panama (*fumosus*) described as whistled "ka-kweek" or nasal "ta-whoip" or "ka-whick", also nasal, whining "nyeeeah" or "knaaayr, kaayr", and nasal chatter. W of Andes and in W Amazonia a distinctive, clear, querulous "tcha-tcheah" or "kweeeeahhh", often repeated at short intervals. In Guianan Shield region a sharp, emphatic "chuck-kwihhh", second note rising.

**Habitat.** Montane and tropical lowland evergreen forest; primarily hilly and lower montane tropical forest in Middle America and Andean region; mainly lowland tropical forest in the Guianas and NE Brazil (*obscurus*). Some indication of a preference for bottoms of densely vegetated ravines. At 500-2500 m in Middle America; from near sea-level to 1300 m in South America.

**Food and Feeding.** Recorded dietary items are Orthoptera (including Tettigoniidae), cockroaches (Blattodea), Coleoptera, spiders, also small frogs and lizards. Usually in pairs, rarely in mixed-species flocks, mainly in undergrowth. Gleans arthropods and small vertebrates from dead leaves, and pecks at decaying branches; occasionally flakes leaf litter on ground.

**Breeding.** Eggs in May in S Mexico and Jun in Ecuador; nestlings in Oct in French Guiana. Monogamous, paired throughout year. Two nests described, a broad, shallow platform 15 cm in diameter, made of rootlets, fungal rhizomorphs and soft, fine plant fibres, placed in enlarged chamber 15 cm long and 10 cm high at end of tunnel 0.5-2 m long, excavated in dirt bank. Clutch 2 eggs.

**Movements.** Resident; suggestion of partial altitudinal migration in Mexico.

**Status and Conservation.** Not globally threatened. Rare to locally fairly common. Patchy and local in much of its range; reasons for this not understood, possibly related to details of habitat requirements. Estimated density 3-6 birds/km² at four sites in French Guiana (race *obscurus*). Occurs in several protected areas, e.g. Raleigh Falls-Voltzberg National Park, in Surinam, Rio Palenque Science Centre, in Ecuador, and Tumbes National Reserve and Manu National Park and Biosphere Reserve, in Peru.

**Bibliography.** Alonso *et al.* (2001), Angehr & Auca (1997), Anon. (1998a), Binford (1989), Bond (1945), Cadena, Álvarez *et al.* (2000), Cook (1996), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Foster *et al.* (1994), Gómez de Silva *et al.* (1999), Haverschmidt & Mees (1994), Hilty (1997, 2003a), Hilty & Brown (1983, 1986), Howell & Webb (1995a), Komar (2002), Marin & Carrión (1991), Marshall (1943), Meyer de Schauensee (1947, 1952), Monroe (1968), Novaes (1978), Parker *et al.* (1982), Pinto (1978), Remsen (2003a), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Robbins *et al.* (1985), Rodner *et al.* (2000), Rowley (1966), Salaman, Donegan & Cuervo (2002), Schulenberg (2002), Schulenberg *et al.* (2001), Sick (1993, 1997), Snyder (1966), Stiles (1985), Stiles & Skutch (1989), Stiles *et al.* (1999), Stotz *et al.* (1996), Terborgh *et al.* (1984), Thiollay (1986, 1994), Thurber *et al.* (1987), Todd & Carriker (1922a), Tostain *et al.* (1992), Wetmore (1972), Zimmer (1935a), Zimmer & Phelps (1947).

220. Chestnut-crowned Foliage-gleaner

*Automolus rufipileatus*

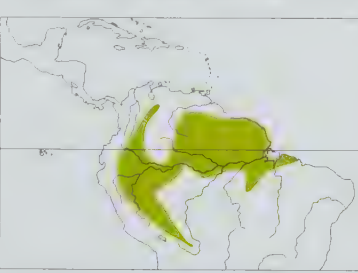
**French:** Anabate à couronne rousse    **Spanish:** Ticotico Coronicaño  
**German:** Rostkappen-Baumspäher

**Taxonomy.** *Anabates rufipileatus* Pelzelin, 1859, Pará, Brazil.

No obvious sister-species in genus. Proposed race *maynanus*, from S Peru and Bolivia, described as brighter ochraceous below than nominate, but individual variation prevents diagnosis. Two subspecies recognized.

**Subspecies and Distribution.**

- A. r. consobrinus* (P. L. Selater, 1870) - N & W Amazonia in E Colombia (along base of E Andes S from Arauca, in lowlands S from Meta), S Venezuela (W Barinas S along base of Andes, also NW Bolívar, Amazonas) and the Guianas S to E Ecuador, E Peru, W & NC Brazil (E to R Jurua) and NW Bolivia (S to Cochabamba).
- A. r. rufipileatus* (Pelzelin, 1859) - Brazil S of R Amazon (R Purús E to NW Maranhão).



**Descriptive notes.** 18-19 cm; 31-38 g. A rather uniformly rufescent *Automolus*. Has face mostly rufescent brown, trace of pale shaft streaks on auriculars; crown rather dark reddish-chestnut, blending to darkish warm olivaceous brown back; rump reddish-brown, uppertail-coverts reddish-chestnut; wings mostly darkish rufescent brown, primary coverts slightly darker, bend of wing ochraceous rufous; tail slightly rounded, rectrices with nearly rounded tips (hint of points), rather dark, dull chestnut; throat bright buff, blending to pale dull buff-brown breast and belly; sides and flanks medium dull brown, undertail-coverts

dull rufescent brown; iris yellow-orange to orange (described as brown in Surinam); upper mandible blackish to dusky brown to olive-grey, lower mandible paler, silvery horn to greyish-olive; tarsus and toes greenish-grey to yellowish-olive. Sexes alike. Juvenile has slightly duller and darker upperparts, dusky feather margins on breast, central belly and, occasionally, throat. Race *consobrinus* has more rufescent back, darker, more ochraceous underparts. **VOICE.** Song a series of low, short, fast, staccato, almost trilled, complaining notes, "kee-ee-ee-rr-rrrrrrrr" or "dee'd'd'd'd'd'd'a", slightly descending and ending abruptly, lasts c. 1-1.5 seconds; call a peculiar, resonant, deep "jyoo" or "cheeu".

**Habitat.** Riverine and várzea forest, especially in or near thickets of *Gynerium* cane or *Guadua* bamboo; locally in *terra firme* forest in bamboo patches. Mostly from near sea-level to 500 m; locally to 1300 m.

**Food and Feeding.** Diet primarily Orthoptera, Coleoptera, and spiders; Heteroptera and small tree-frogs also recorded. Usually forages in pairs, regularly to only occasionally in mixed-species flocks, in dense undergrowth to lower mid-storey. Acrobatically gleans and pulls arthropods from dead leaves and debris. Dead-leaf specialist: at a site in SE Peru, more than 90% of all observed foraging manoeuvres involved searching of dead leaves, c. 40% of which were in bamboo thickets; at another locality there, 100% of foraging manoeuvres were directed at dead leaves.



**Breeding.** Two males in breeding condition in Feb in Venezuela (Amazonas). Nest not described; territory size in SE Peru c. 2-3 ha. No other information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common. Restriction to linear habitat, namely riverine areas, naturally limits its global population. Occurs in several protected areas, including Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, and Cristalino State Park, in Brazil.

**Bibliography.** Angehr & Auca (1997), Cadena, Álvarez *et al.* (2000), Cory & Hellmayr (1925), Foster *et al.* (1994), Graves & Zusi (1990), Gyllenstein (1945a), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Kratter & Parker (1997), Munn (1985), Novaes (1958), Parker & Bailey (1991), Parker *et al.* (1982), Pinto (1978), Remsen (2003a), Remsen & Parker (1983, 1984), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Rodner *et al.* (2000), Rosenberg (1997), Schulenberg *et al.* (2001), Sick (1993, 1997), da Silva *et al.* (1990), Snyder (1966), Stotz *et al.* (1996), Terborgh *et al.* (1984), Tostain *et al.* (1992), Willard *et al.* (1991), Zimmer, J.T. (1935a), Zimmer, K.J. *et al.* (1997).

## Genus *HYLOCRYPTUS* Chapman, 1919

### 221. Henna-hooded Foliage-gleaner

*Hylocryptus erythrocephalus*

**French:** Anabate à tête orange

**Spanish:** Ticotico Cabecirrufo Occidental

**German:** Westlicher Rötelbaumpäher

**Other common names:** Tawny-headed Hylocryptus

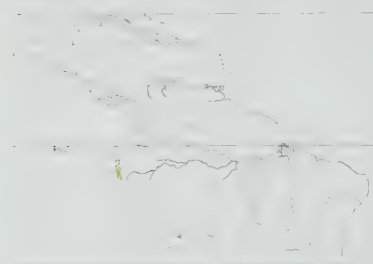
**Taxonomy.** *Hylocryptus erythrocephalus* Chapman, 1919, Alamor, 4300 feet [c. 1300 m], Peru-Ecuador border.

Has sometimes been placed in genus *Automolus*. Race *palambiae* known from only few specimens; quantitative analysis may show that it is not diagnosable. Two subspecies recognized.

**Subspecies and Distribution.**

*H. e. erythrocephalus* Chapman, 1919 - SW Ecuador (coastal cordillera in SW Manabí and W Guayas, also El Oro and W Loja) and extreme NW Peru (Tumbes).

*H. e. palambiae* J. T. Zimmer, 1935 - NW Peru (Piura, Lambayeque).



**Descriptive notes.** 22 cm; 42-51 g. Large, distinctively patterned, handsome, long-billed foliage-gleaner. Has nearly uniform orange-rufous face slightly paler than crown, hint of slightly paler supercilium, lores light greyish; crown rufous, faint paler shaft spotting on forehead; broad rufous collar on nape and upper back, faintly paler than crown; rest of back sharply demarcated, dull olive grey-brown, rump and uppertail-coverts rufous; wings nearly uniform rufous; tail nearly square, shafts slightly stiffened basally, nearly rounded tips, slightly darker rufous than rump; throat, malar area and side of neck light cinnamon-rufous;

breast and belly light greyish-olive, sides and flanks slightly darker, undertail-coverts rufous; iris orange-brown to light brown to grey to greenish-white (source of variation uncertain); upper mandible dark grey-brown, grey or blackish-grey, lower mandible greyish-pink, blue-grey, whitish or pale horn (source of variation uncertain); tarsus and toes olive, olive-grey or grey. Sexes alike. Juvenile has narrow dark feather tips on crown and underparts. Race *palambiae* is slightly paler rufous on head, slightly duller brown on back. **Voice.** Song a distinctive, mechanical, staccato "tok-tok-tok-tok-tok-tok" or "kree-kruh-kruh-kruh-kruh-kruh-kurt". Call a nearly continuous "dee dee dee"; short series of low "tic" notes also given.

**Habitat.** Tropical deciduous forest with dense understorey and thick leaf-litter layer; often in ravines and long strips of riparian woodland; also in disturbed woodland remnants and even scrub. Mostly 600-1300 m, locally down to 150 m and up to 1900 m.

**Food and Feeding.** Invertebrates; isopods recorded. Forages singly or in pairs, regularly in mixed-species flocks, mostly on or close to ground. Gleans food items from ground and leaf litter, often rummaging through litter by flaking and tossing leaves; occasionally forages in low vegetation, rummaging in dead leaves, or briefly hitches up small tree trunks.

**Breeding.** Season reported to be in Jan-May in Ecuador; nestlings in Mar and Apr in Peru. Presumably monogamous. Nest at end of tunnel c. 1 m long in dirt bank. No further information available.

**Movements.** Presumably resident, but local seasonal movements suspected.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Tumbesian Region EBA. Rare to fairly common; very local. Population recently estimated at 2500-10,000 individuals; declining as a result of habitat destruction. Occurs in three protected areas: in SW Ecuador, rare in Machalilla National Park and present in Cerro Blanco Forest Reserve; in NW Peru, common in Tumbes National Reserve. Much or most of original deciduous forest in this region has been destroyed or severely degraded. Continuing habitat loss and degradation, including through illegal activities in officially protected areas, a major threat. Nevertheless, this species persists in highly degraded forest and woodland remnants.

**Bibliography.** Becker *et al.* (2000), Begazo *et al.* (2001), Berg (1994), Chapman (1919, 1926), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cook (1996), Cory & Hellmayr (1925), Parker & Carr (1992), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1995), Paynter (1972), Remsen (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schulenberg & Parker (1981), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Walker (2002), Wege & Long (1995), Wiedenfeld *et al.* (1985), Zimmer (1935b, 1936c).

### 222. Chestnut-capped Foliage-gleaner

*Hylocryptus rectirostris*

**French:** Anabate à bec droit

**German:** Östlicher Rötelbaumpäher

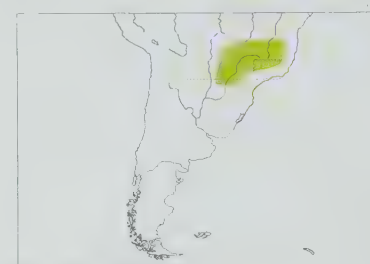
**Spanish:** Ticotico Cabecirrufo Oriental

**Other common names:** Henna-capped Foliage-gleaner, Straight-billed Automolus

**Taxonomy.** *Opetiorynchus rectirostris* Wied, 1831, Campos Geraes on the Bahia-Minas Gerais border, Brazil.

Formerly placed in genus *Automolus*, even after recognition of present genus. Monotypic.

**Distribution.** Interior SC Brazil (C Mato Grosso, S Goiás and extreme S Bahia S to SW Minas Gerais, extreme E São Paulo and NW Paraná) to E Paraguay (San Pedro).



**Descriptive notes.** 20-21 cm; 44-51 g. Large, long-billed foliage-gleaner with fairly uniform plumage. Has chestnut face, light rufous moustachial area; crown chestnut, blending to vague collar of slightly paler reddish-chestnut, and to rich ochraceous brown back and rump; uppertail-coverts chestnut; wings mostly dark rufous; tail slightly rounded, rectrices with nearly rounded tips, chestnut; throat pale rufous, blending to slightly darker breast and belly; flanks darker rufous; brown, undertail-coverts reddish-rufous; iris sulphur-yellow; bill dark grey, paler base of lower mandible; tarsus and toes greyish. Sexes

alike. Juvenile undescribed. **Voice.** Calls include loud "wat", ka, ka, ka", and "co-co-co-rec" like domestic chicken.

**Habitat.** Gallery forest, locally in deciduous woodland; 200-1000 m.

**Food and Feeding.** Arthropods. Forages solitarily or in pairs, perhaps occasionally in mixed-species flocks. Mostly terrestrial; gleans items from ground, presumably mainly in leaf litter.

**Breeding.** Presumably monogamous. Nest of dry leaves and grass (form not described), placed at end of horizontal tunnel excavated in dirt bank. No further information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare to uncommon. Rather poorly known species.

**Bibliography.** Anon. (2003j), Betini *et al.* (1998), Hayes (1995), Kirwan *et al.* (2001), Marini (2001), Marini, Motta-Júnior *et al.* (1997), Melo-Júnior *et al.* (2001), Paynter (1972), Pinto (1978), Remsen (2003a), Ridgely & Tudor (1994), Sick (1993, 1997), Storer (1989), Stotz *et al.* (1996).



THE GARDEN

100

100



PLATE 29

inches 3  
cm 8

*ssp mexicanus*

223

*ssp obscurior*

*ssp rufigularis*

224

*ssp fulvicularis*

*ssp guatemalensis*

225

*ssp salvini*

*ssp caudacutus*

226

*ssp brunneus*

*ssp albigularis*

227

*ssp canigularis*

*ssp nematura*

*ssp sororius*

228

229

*ssp scansor*

*ssp cearensis*

*ssp obscuratus*



## Genus *SCLERURUS* Swainson, 1827

### 223. Tawny-throated Leaf-tosser

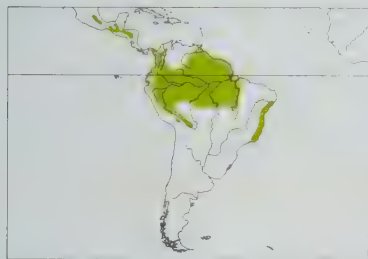
#### *Sclerurus mexicanus*

**French:** Sclérure à gorge rousse **German:** Rostkehl-Laubbwender **Spanish:** Tirahojas Mexicano  
**Other common names:** Tawny-throated/Mexican Leafscraper

**Taxonomy.** *Sclerurus mexicanus* P. L. Slater, 1857, Córdoba, Veracruz, southern Mexico. Plumage similarities have suggested to most authors that this and *S. ruficularis* are sister-species. Apparent elevational parapatry in E Panama of lowland race *andinus* and highland *obscurior* suggests that more than one species may be involved. Racial identity of birds from W slope of E Andes in Colombia uncertain; tentatively included with *peruvianus* but possibly belong with *andinus*. Proposed races *certus* (Guatemala) and *anomalus* (E Panama) are considered not diagnosable. Seven subspecies recognized.

#### **Subspecies and Distribution.**

*S. m. mexicanus* P. L. Slater, 1857 - SE Mexico (from Veracruz) S to N Nicaragua.  
*S. m. pullus* Bangs, 1902 - highlands of Costa Rica and W Panama (E to Veraguas and Coelá).  
*S. m. andinus* Chapman, 1914 - lowlands of E Panama (Panamá E to Darién and San Blas), locally in N Colombia (E to Perijá Mts), extreme NW & S Venezuela and W Guyana (tepui region).  
*S. m. obscurior* Hartert, 1901 - highlands of E Panama in Darién (Cerro Pirre, Tacarcuna and Mali), and W Andes from W Colombia S to SW Ecuador (El Oro, W Loja).  
*S. m. peruvianus* Chubb, 1919 - W Amazonia locally from S Colombia (base of E Andes on W slope in Santander, on E slope S from W Meta) S to E Peru, W Brazil (Amazonas, Acre, N Rondônia) and N Bolivia (S to NW Santa Cruz).  
*S. m. macconnelli* Chubb, 1919 - the Guianas and N Brazil (E from R Negro and, S of R Amazon from R Tapajós E to Maranhão and S locally to N Mato Grosso).  
*S. m. bahiae* Chubb, 1919 - coastal E Brazil (Alagoas S to NE São Paulo).



**Descriptive notes.** 15-17 cm; 24-30 g. A dark, rather plain furnariid with perhaps relatively the longest and thinnest bill in the family. Nominative race has dark brownish, faintly grizzled face; crown dark rich brown, blending to slightly paler, redder back; rump and uppertail-coverts dark chestnut; wings nearly uniform dark reddish-brown; tail rounded, broad, shafts of rectrices stiffened, tips sometimes lacking barbs for distal 1-2 mm. sooty blackish with faint reddish-brown margins; throat and malar area dull rufous-chestnut, upper breast darker chestnut, lower breast to undertail-coverts nearly uniform chestnut-

brown; iris dark brown to brown; upper mandible black to brownish-black, lower mandible black, dark grey or whitish to dull brownish-horn, with black tip; tarsus and toes black to brown. Distinguished from very similar *S. ruficularis* mainly by much longer bill. Sexes alike. Juvenile is duller, with paler shaft streaks on breast, dusky scaling on throat and breast. Race *pullus* is like nominate, but upperparts darker brown, rump more reddish, throat paler, less reddish, breast and belly darker brown, less reddish; *andinus* is lighter brown throughout, rump and uppertail-coverts brighter reddish-brown; *obscurior* is darker, more dusky throughout, with less contrast between throat and breast, reddish-chestnut of uppertail-coverts darker and more restricted; *peruvianus* lacks bright chestnut on rump and uppertail-coverts, which barely more rufescent than back; *macconnelli* differs from last in much more intensely tawny-rufous throat, extending into breast, more generally olivaceous colour throughout; *bahiae* apparently differs from previous in having darker brown upperparts, deep rufous rump contrasting with back, darker throat and chest, and darker brown, less olivaceous breast. **VOICE.** Song a descending set of 4-9 high-pitched, wheezy notes, fading and accelerating, "peeeeeee-peece-peece-chrrrr"; race *pullus* described as descending series of sharp "squee" notes, or descending series of progressively shorter whistled notes "pseer-pseer-pseer-pseer-pse"; *peruvianus* a descending, slightly decelerating series of high, plaintive, clear, whistled "suweet" notes, often with terminal trill, lasts c. 3 seconds; unclear whether variation due to differences in descriptions or genuine geographical variation. Alarm a sharp "squee", "zick", "tseéct" or "chick".

**Habitat.** Tropical lowland and montane evergreen forest, usually in hilly areas. Mainly 700-2200 m in Middle America; in South America from near sea-level to 1500 m, locally to 2000 m.

**Food and Feeding.** Invertebrates. Singly, occasionally in pairs. Terrestrial; hops on ground (does not walk); tail tips often pressed to substrate. Gleans, pecks and probes food items from moist ground, leaf litter and rotting logs; flakes and tosses leaf litter to expose prey.

**Breeding.** Season Dec-Apr in Costa Rica; egg in oviduct in Apr in Mexico; eggs in Apr in French Guiana. Presumably monogamous. Nest a loose cup of dry twigs placed at end of tunnel c. 50 cm long, probably excavated by the birds, in dirt bank; territory size near Manaus (Brazil) c. 25 ha from radio-telemetry studies. Clutch 2 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare to uncommon throughout range; distribution seems patchy in many parts of range. Estimated density 1-6 birds/km<sup>2</sup> at four sites in French Guiana. Occurs in numerous protected areas. Disappears from fragmented or selectively logged forests.

**Bibliography.** Anon. (1998a), Barnett *et al.* (2002), Binford (1989), Chapman (1926), Cory & Hellmayr (1925), Graves & Zusi (1990), Goldenstone (1945a), Haverschmidt & Mees (1994), Hilty (1997, 2003a), Hilty & Brown (1986), Howell & Webb (1995a), Monroe (1968), Parker *et al.* (1982), Pinto (1978), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Robbins *et al.* (1985), Rodner *et al.* (2000), Rowley (1984), Salaman, Donegan & Cuervo (1999), Salaman, Stiles *et al.* (2002), Schmitt & Schmitt (1987), Schulenberg *et al.* (2001), Sick (1993, 1997), da Silva *et al.* (1990), Slud (1964), Snyder (1966), Stiles (1985), Stiles & Skutch (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer (2003), Stouffer & Bierregaard (1995), Terborgh *et al.* (1984), Thiollay (1986, 1992, 1994), Tostain *et al.* (1992), Wetmore (1951, 1972), Zimmer (1930, 1934e).

### 224. Short-billed Leaf-tosser

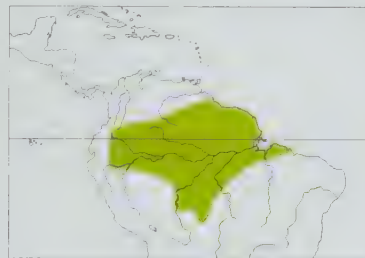
#### *Sclerurus ruficularis*

**French:** Sclérure à bec court **German:** Zimtkehl-Laubbwender **Spanish:** Tirahojas Piquicorto  
**Other common names:** Short-billed Leafscraper

**Taxonomy.** *Sclerurus ruficularis* Pelzelin, 1868, Borba, Amazonas, Rio Madeira, Brazil. Plumage similarities have suggested to most authors that this and *S. mexicanus* are sister-species. Four subspecies recognized.

#### **Subspecies and Distribution.**

*S. r. fulvicularis* Todd, 1920 - S Venezuela (Amazonas, Bolívar), the Guianas and N Brazil (probably in Roraima).  
*S. r. brunescens* Todd, 1948 - SE Colombia (S from Meta and Vaupés), W Brazil N of R Amazon (E to possibly right bank of R Negro), E Ecuador and NE Peru (N of R Amazon in Amazonas, Loreto and San Martín).  
*S. r. furfuriosus* Todd, 1948 - N Brazil N of R Amazon (E from possibly R Negro).  
*S. r. ruficularis* Pelzelin, 1868 - S of R Amazon in NE Peru (N Loreto), Brazil (Amazonas E to Maranhão, S to N Mato Grosso) and E Bolivia (E Beni, NE Santa Cruz).



**Descriptive notes.** 15-16 cm; 19-25 g. Nominative race has face dark brownish, faintly grizzled; crown dark brown with reddish tones, very faint darker feather margins; back dark reddish-brown, blending to dark chestnut-brown rump and even darker uppertail-coverts; wings nearly uniform dark reddish-brown; tail rounded, broad, shafts of rectrices stiffened, tips sometimes lacking barbs for distal 1-2 mm, sooty blackish with faint reddish-brown margins; throat and malar area dull orange-rufous, blending to more richly and deeply coloured upper breast with faint, narrow paler shaft streaking; breast becomes darker, less chestnut posteriorly, blending to rich reddish-brown belly and flanks, slightly darker undertail-coverts; iris dark grey-brown to brown; upper mandible black to grey, lower mandible usually bicoloured, distal half black or grey, basal half pinkish or grey; tarsus and toes black to brownish to grey. Distinguished from very similar *S. mexicanus* mainly by much shorter bill (shortest in genus). Sexes alike. Juvenile has duller, browner rump and uppertail-coverts. Race *fulvicularis* differs from nominate in having brown areas more olivaceous (less reddish), paler throat, darker upper breast with broad, blurry rufous shaft streaks; *brunescens* is like previous but generally darker, less rufescent, especially on underparts; *furfuriosus* is described as generally paler in coloration, both above and below. **VOICE.** Song a high-pitched fast series of notes that descend, then ascend and accelerate, and then level out and decelerate; call a sharp "suip".

**Habitat.** Tropical lowland evergreen forest, *terra firme*. From near sea-level to 500 m, locally to 900 m; recorded once to 1800 m in Colombia.

**Food and Feeding.** Invertebrates; alate termites (Isoptera) recorded. Usually solitary. Terrestrial; hops on ground, does not walk. Gleans items from ground and leaf litter; flakes litter to expose prey.

**Breeding.** Nest not described, apparently similar to that of congeners; territory size near Manaus (Brazil) c. 17 ha from radio-telemetry studies. No other information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare to locally uncommon; fairly common in S Venezuela; distribution patchy. Estimated density 1-4 birds/km<sup>2</sup> at four sites in French Guiana. Occurs in numerous protected areas. Disappears from fragmented or selectively logged forests.

**Bibliography.** Boesman (1998), Cadena, Álvarez *et al.* (2000), Cardiff (1983), Cory & Hellmayr (1925), Fitzpatrick & Willard (1982), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Novas (1990), Oren (1990), Parker *et al.* (1982), Pinto (1978), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salaman *et al.* (1999), Schubart *et al.* (1965), Sick (1993, 1997), da Silva *et al.* (1990), Snyder (1966), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer & Bierregaard (1995), Thiollay (1986, 1992, 1994), Todd (1948b), Tostain *et al.* (1992), Willard *et al.* (1991).

### 225. Scaly-throated Leaf-tosser

#### *Sclerurus guatemalensis*

**French:** Sclérure écaillé **German:** Fleckenbrust-Laubbwender **Spanish:** Tirahojas Guatemalteco  
**Other common names:** Guatemalan Leaf-tosser, Scaly-throated/Guatemalan Leafscraper

**Taxonomy.** *Tinactor guatemalensis* Hartlaub, 1844, no locality = Guatemala.

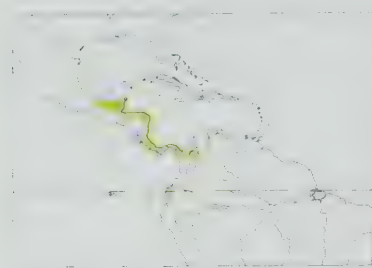
This and *S. caudacutus* thought by most authors to be sister-species on basis of plumage similarities and parapatric ranges. Substantial individual variation in characters used to define races; suspected that all differences may be a combination of clinal and individual variation, and that naming of geographical races thus not warranted; *ennosphyllus* intergrades with *salvini* in Atrato Valley (Colombia). Three subspecies recognized.

#### **Subspecies and Distribution.**

*S. g. guatemalensis* (Hartlaub, 1844) - S Mexico (from Veracruz) S to C Panama (Colón).  
*S. g. salvini* Salvadori & Festa, 1899 - E Panama (Panamá to Darién), NW Colombia (N Chocó) and W Ecuador (Esmeraldas S to SW Manabí, formerly to N Guayas).  
*S. g. ennosphyllus* Wetmore, 1951 - N Colombia (Antioquia E to Bolívar)

**Descriptive notes.** 16-18 cm; 29-38 g. Scaly pattern on throat more conspicuous than in congeners. Has dark brownish face, some rufescent flammulations on auriculars; malar area and neck side rufescent brown with darker feather margins, producing vaguely scaly look; crown dark brown with slightly darker feather margins, appearing faintly scalloped; back to uppertail-coverts rich dark brown, darkest at tips of tail-coverts; wings nearly uniform rich dark brown; tail rounded, broad, shafts of rectrices stiffened, tips sometimes lacking barbs for distal 1-2 mm, sooty blackish; chin whitish with faint dark lower margins, throat whitish with increasingly conspicuous blackish feather margins that produce scaly look; breast dull reddish-brown with short, broad rufous shaft streaks in centre, rest of underparts nearly uniform dark brown, undertail-





more olive. **Voice.** Song a fast series of 10-15 sharp, clear, whistled notes, "pwik wuk-wuk-wuk-wuk-wuk", rising and accelerating somewhat in middle, then decelerating slightly; also described as ending in accelerating, ascending tinkling notes; longer series (5-6 seconds) of ascending notes also given, often repeated many times in rapid succession. Call a very sharp "pick", "shweek" or "wheel".

**Habitat.** Tropical lowland evergreen forest with sparse undergrowth; locally tall second growth, locally also montane evergreen forest. From near sea-level to 1000 m, locally to 1250 m.

**Food and Feeding.** Invertebrates. Forages singly, occasionally in pairs. Terrestrial; hops on ground, tail tips often pressed to substrate; does not walk. Gleans and probes moist ground, leaf litter and rotting logs; flakes leaf litter to expose prey.

**Breeding.** Eggs in Apr in Honduras and May and Oct-Dec in Costa Rica; nestlings in Jan, Mar and Jun in Costa Rica and Mar in Panama. Monogamous. Nest a shallow cup of leaf stems, usually rachides of compound leaves, placed in expanded chamber at end of curving tunnel 0.5-1 m long, excavated in dirt bank, occasionally in dirt bound into root-mass of fallen tree. Clutch 2 eggs; incubation by both sexes, estimated period at least 21 days; nestling period 14-15 days.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to rare throughout range. Population in Ecuador recently listed as vulnerable, main threat being forest destruction and fragmentation caused by agricultural expansion; present in Machalilla National Park, and possibly still in Rio Palenque Science Centre.

**Bibliography.** Anon. (1998a), Becker & López (1997), Binford (1989), Burton (1975), Chapman (1926), Cory & Hellmayr (1925), England (2000), Hilty & Brown (1986), Howell & Webb (1995a), Kiff (1996), Monroe (1968), Parker *et al.* (1994), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Robbins, Capparella *et al.* (1991), Robbins, Parker & Allen (1985), Robinson *et al.* (1999), Russell (1964), Skutch (1966, 1969c, 1985), Slud (1960, 1964), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Walters (1995), Wetmore (1951, 1972), Willis (1980), Willis & Eisenmann (1979).

## 226. Black-tailed Leafthorser

### *Sclerurus caudacutus*

**French:** Sclérure des ombres **German:** Weißkehl-Laubwender **Spanish:** Tirahojas Colinegro  
**Other common names:** Black-tailed Leafscraper

**Taxonomy.** *Thamnophilus caudacutus* Vieillot, 1816. French Guiana.

This and *S. guatemalensis* thought by most authors to be sister-species on basis of plumage similarities and parapatric ranges. Validity of race *insignis*, described from a single locality, seems questionable. Geographical distribution of races, particularly N of R Amazon, not well understood, and individual variation in many of the characters used to describe most of them may lead to substantial revision of boundaries; specimens from R Purús (W Brazil) intermediate between *pallidus* and *brunneus*; further, proposed race *olivascens* (from SC Peru) evidently not diagnosable, probably represents clinal variation within latter (specimens from SW Amazonia less reddish on average than those farther N). Critical revision of races and their boundaries badly needed. Five subspecies recognized.

**Subspecies and Distribution.**

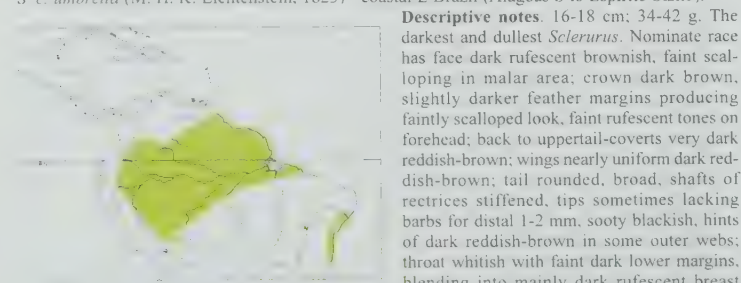
*S. c. brunneus* P. L. Selater, 1857 - W Amazonia from SE Colombia (S from W Meta and Vaupés) and S Venezuela S to E Ecuador, E Peru, W Brazil (W Amazonas, Acre, Rondônia) and N Bolivia (Pando, NW La Paz).

*S. c. caudacutus* (Vieillot, 1816) - the Guianas.

*S. c. insignis* J. T. Zimmer, 1934 - N Brazil N of R Amazon (NW Pará; probably more widespread).

*S. c. pallidus* J. T. Zimmer, 1934 - C Brazil S of R Amazon (E from at least R Madeira to W Maranhão).

*S. c. umbretta* (M. H. K. Lichtenstein, 1823) - coastal E Brazil (Alagoas S to Espírito Santo).



(some continuation of throat pattern on uppermost breast), and to almost blackish-brown rest of underparts; iris brown to dark brown; upper mandible black to blackish-brown, lower mandible usually bicoloured, with pale grey, creamy or pinkish base and grey to black tip; tarsus and toes black to dark brown. Sexes alike. Juvenile is slightly darker throughout, has smaller, duller throat patch with darker feather margins. Race *insignis* is described as like nominate but upperparts duller, less rufous-brown; *brunneus* is slightly paler, more olivaceous throughout, throat duller with broader, more brownish (less blackish) margins, variable, more reddish in N of range, legs sometimes dull reddish-tinged; *pallidus* is paler in general coloration, throat white with dusky tips, breast and face ochraceous brown (not dark brown); *umbretta* is like nominate but throat feathers pure white, each feather with dusky tip, chest duller, less rufescent, lower breast and belly browner (much darker overall than nearest Amazonian races). **Voice.** Song a series of 10-12 loud, ringing, descending "kweet" or "whee" notes, usually introduced by low sputtering trill; call a sharp "skweeup".

coverts slightly darker; iris dark brown to brown; upper mandible black to dark grey, lower mandible usually bicoloured, with pinkish, greyish-horn or yellowish-horn base, dark grey to black tip; tarsus and toes black to blackish-brown to grey. Sexes alike. Juvenile has less regular margins on throat feathers, is slightly darker throughout, breast sometimes tinged ochraceous. Race *salvini* is like nominate, but upperparts and belly darker and more sooty, less reddish, breast markings narrower and less conspicuous; *ennosiphylus* is described as like previous but paler and greyer above, paler below, outer webs of primaries

**Habitat.** Tropical lowland evergreen forest; *terra firme*. From near sea-level to 500 m; locally to 950 m in E Ecuador and to 1100 m in Venezuela.

**Food and Feeding.** Invertebrates: cockroach (Blattodea) oothecae, also Coleoptera, annelid worms and ants reported. One record of a fallen fruit eaten. Usually observed singly. Terrestrial; hops on ground, does not walk. Gleans and probes ground and leaf litter; flakes litter to expose prey.

**Breeding.** Nestlings in Jun in S Peru. Monogamous. Nest a shallow cup c. 13 cm in diameter, made of leaf petioles, placed in enlarged chamber at end of straight tunnel 50 cm long, probably excavated by the birds themselves, in dirt bank; estimated territory size 18 ha. Clutch 2 eggs; both parents feed nestlings.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally common. Estimated densities of 6 birds/km<sup>2</sup> in transitional forest in SE Peru and 5-10/km<sup>2</sup> at four *terra firme* sites in French Guiana. Occurs in a number of protected areas, e.g. Imataca Forest Reserve and El Dorado, in Venezuela, Cuyabeno Reserve, in Ecuador, and Cristalino State Park, in Brazil. Disappears from fragmented or selectively logged forests.

**Bibliography.** Angehr & Aueca (1997), Barnett *et al.* (2002), Cadena, Álvarez *et al.* (2000), Cory & Hellmayr (1925), Denton & Blue-Smith (2000), Foster *et al.* (1994), Goeldi (1896), Graves & Zusi (1990), Gyldestolpe (1945a, 1951), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Munn & Terborgh (1979), Novaes (1990), Oren (1990), Oren & Parker (1997), Parker & Bailey (1991), Parker & Goerck (1997), Parker *et al.* (1982), Pinto (1953, 1978), Remsen & Traylor (1989), Renssen (1974), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Rodner *et al.* (2000), Salaman *et al.* (1999), Schubart *et al.* (1965), Schulenberg *et al.* (2001), Scott & Brooke (1985), Sick (1993, 1997), da Silva *et al.* (1990), Snyder (1966), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stotz, Pequeño *et al.* (2002), Stouffer & Bierregaard (1995), Terborgh *et al.* (1984), Thiollay (1986, 1992, 1994), Tostain *et al.* (1992), Zimmer, J.T. (1934e), Zimmer, K.J. *et al.* (1997).

## 227. Grey-throated Leafthorser

### *Sclerurus albicularis*

**French:** Sclérure à gorge grise **German:** Graukehl-Laubwender **Spanish:** Tirahojas Gorgigris  
**Other common names:** Grey-throated Leafscraper

**Taxonomy.** *Sclerurus albicularis* P. L. Selater and Salvin, 1868, Cumbre de Valencia, Carabobo, Venezuela.

Plumage similarities and biogeography suggest that *S. scansor* may be its sister-species. Pattern of geographical variation generally conforms to Gloger's Rule, with plumage darker in warm, humid areas than in colder, drier ones. Within nominate race, population in Trinidad and Tobago significantly smaller than mainland populations. Racial identity of birds from SW Brazil (Acre, N Rondônia) and others reported from S Bolivia (Tarija) uncertain; presumed to belong to *albicollis*. Proposed race *kunanensis*, of Perijá Mts (Colombia-Venezuela border), described as having belly more greenish-olive, remiges more olivaceous and rectrices blackish, but appears indistinguishable from nominate. Six subspecies recognized.

**Subspecies and Distribution.**

*S. a. canicularis* Ridgway, 1889 - foothills of Costa Rica and W Panama (W Chiriquí).

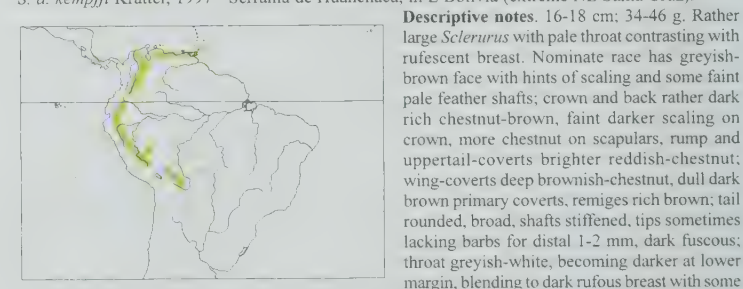
*S. a. propinquus* Bangs, 1899 - Santa Marta Mts, in N Colombia.

*S. a. albicularis* P. L. Selater & Salvin, 1868 - Perijá Mts, also S in E Andes of Colombia (E slope S to E Cauca, also Macarena Mts) and locally in foothills of W & N Venezuela (Andes, coastal range E to Sucre on Paria Peninsula); also Trinidad and Tobago.

*S. a. zamorae* Chapman, 1923 - foothills of Andes from E Ecuador (S from W Napo) S to C Peru (Cajamarca S to Pasco).

*S. a. albicollis* Carriker, 1935 - SE Peru (Ucayali), SW Brazil (Acre, N Rondônia) and Andean foothills in Bolivia (from La Paz and Beni S to NW Santa Cruz, also sight records from Tarija).

*S. a. kempffii* Kratter, 1997 - Serranía de Huanchaca, in E Bolivia (extreme NE Santa Cruz).



**Descriptive notes.** 16-18 cm; 34-46 g. Rather large *Sclerurus* with pale throat contrasting with rufescent breast. Nominative race has greyish-brown face with hints of scaling and some faint pale feather shafts; crown and back rather dark rich chestnut-brown, faint darker scaling on crown, more chestnut on scapulars, rump and uppertail-coverts brighter reddish-chestnut; wing-coverts deep brownish-chestnut, dull dark brown primary coverts, remiges rich brown; tail rounded, broad, shafts stiffened, tips sometimes lacking barbs for distal 1-2 mm, dark fuscous; throat greyish-white, becoming darker at lower margin, blending to dark rufous breast with some paler shaft streaking; belly dull brown, flanks and undertail-coverts richer brown; iris dark brown to brown; upper mandible black to dark grey, lower mandible usually all pale, greyish-white to pinkish to dull yellowish, sometimes bicoloured, with black or grey tip; tarsus and toes black to brown. Sexes alike. Juvenile is duller throughout, throat faintly scaled dusky. Race *propinquus* is like nominate, but upperparts much darker, breast and belly darker, throat greyer; *canicularis* is even darker for the most part, although rufous areas brighter than in both previous and nominate; *zamorae* is generally darker than nominate, rump and uppertail-coverts duller chestnut, contrasting less with back, chin less whitish, upper breast brighter, belly darker; *albicollis* differs from previous in having brighter, more rufescent upperparts, uppertail-coverts rich rufous, contrasting strongly with back, paler underparts, throat white; *kempffii* is palest, has greyer breast and belly, less rufescent upper breast and back, rump colorous with back. **Voice.** Song a series of 4-6 tripled rising notes, "kwu-kwu-kwe-kwe-kwi-kwi", sometimes musical trills interspersed and at end; also described as series of squeaky, plaintive, ascending, whistled notes, "tuée, tuée, tuée, tweéptu" (nominate race and *albicollis*). Alarm a squeaky, sharp "cheek" or "chik-chik".

**Habitat.** Montane and tropical lowland evergreen forest; mainly foothill and lower montane forest, often in shady ravines. Mostly 600-2000 m in Central America and Andean foothills; locally up to 2200 m and down to 50 m in NE of range.

**Food and Feeding.** Recorded dietary items are Coleoptera, spiders, cockroaches (Blattodea), and tiny frogs. Singly, occasionally in pairs. Terrestrial; hops on ground, does not walk; tail tips often pressed to substrate. Gleans and probes moist ground, leaf litter and rotting logs; flakes leaf litter to expose prey.

**Breeding.** Breeds in Oct-May, with peak Dec-Feb, in Trinidad; eggs in May-Jun in N Colombia. Presumably monogamous. Nest at end of typically curving tunnel 0.3-0.5 m long in dirt bank, enlarged chamber c. 20 cm in diameter lined with a few loose leaf rachides. Clutch 2 eggs.

**Movements.** Resident.



**Bibliography.** Anon. (1993a), Angehr & Aueca (1997), Aledo & Ginés (1950), Belcher & Smooker (1936), Bond (1945), Chapman (1926), Collins & Araya (2002), Cory & Hellmayr (1925), Iñeren (1991), Ejeldsá & Krabak (1990), Ejeldsá & Majer (1996), Foster *et al.* (1994), Hayes *et al.* (1998), Herklotz (1961), Hilty (2003a), Hilty & Brown (1986), Kratter (1997c), Kratter *et al.* (1992), Meyer de Schauensee (1959), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Remsen & Traylor (1989), Remsen *et al.* (1986), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salaman, Donegan & Cuervo (1999), Salaman, Stiles *et al.* (2002), Schmitt & Schmitt (1987), Sick (1993, 1997), Slud (1964), Snow (1985), Stiles (1985), Stiles & Skutch (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh *et al.* (1984), Todd & Carrier (1922b), Verrea *et al.* (1999), Wetmore (1972), Whittaker & Oren (1999), Zimmer, J.T. (1930, 1934), Zimmer, K.J. *et al.* (1997).

**Bibliography.** Aleixo & Galletti (1997), Anon. (1998a), Barnett *et al.* (2002), Canevari *et al.* (1991), Cory & Hellmayer (1925), Cuello (1985), Delgado (1985), Fjeldså & Krabbe (1990), Fjeldså & Majler (1996), Goeldi (1894), Graves (1985), Hayes (1995), Hilty (2003a), Hilty & Brown (1986), Marini, Motta-Júnior *et al.* (1997), Mazar Barnett & Pearman (2001), Melo-Júnior *et al.* (2001), Meyer de Schauensee (1945), Mitchell (1957), Moschione (1993), Narosky *et al.* (1983), Olivares (1969), Olog (1963a, 1979c), Parker & Goerck (1997), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Parrini *et al.* (1999), de la Peña (1988), Phelps & Phelps (1947), Pinto (1978), Rasmussen *et al.* (1996), Rensen & Traylor (1989), Rensen *et al.* (1986), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salaman, Donegan & Cuervo (1999), Salaman, Stiles *et al.* (2002), Schäfer & Phelps (1954), Scott & Brooke (1985), Sick (1993, 1997), Silveira (1988), Stotz *et al.* (1996), Wetmore (1926, 1972), Willard *et al.* (1991), Willis (1992b), Willis & Schuchmann (1993), Zimmer (1930).





## PLATE 30

## Family FURNARIIDAE (OVENBIRDS) SPECIES ACCOUNTS

### Genus *HELIOBLETUS* Reichenbach, 1853

#### 230. Sharp-billed Treehunter

##### *Heliobletus contaminatus*

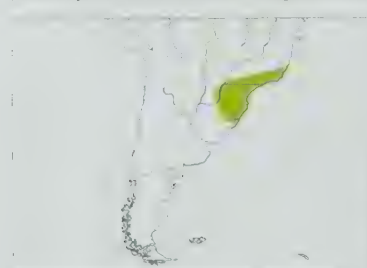
**French:** Sittine à bec fin **German:** Ockerbrauen-Baumspäher **Spanish:** Ticotico Estriado  
**Other common names:** Sharp-billed Xenops, Fulvous-browed Sharp-bill

**Taxonomy.** *Heliobletus contaminatus* Berlepsch, 1885. Nova Friburgo, Rio de Janeiro, Brazil. Species originally named as *H. superciliosus*, then as *Anabates contaminatus*, but that a *nomen nudum*. Genus sometimes merged into *Xenops*; only minor differences between the two in plumage characters, but major differences in vocalizations suggest that they are not closely related. Although both are often placed at end of traditional linear sequences, evidently because of the unusual bill and branch-foraging adaptations, it seems more likely that they were independently derived from various lineages elsewhere within Furnariidae; for example, they are reasonably similar in plumage pattern to other acrobatically foraging genera such as *Premnornis*, *Siptornis*, *Anabacerthia*, *Syndactyla* and *Cichlocolaptes*. Nominate race intergrades with *camargoi* in N São Paulo. Two subspecies recognized.

##### **Subspecies and Distribution.**

*H. c. contaminatus* Berlepsch, 1885 - SE Brazil (S Minas Gerais and Espírito Santo S to N São Paulo and Rio de Janeiro).

*H. c. camargoi* da Silva & Stotz, 1992 - SE Brazil (São Paulo S to Rio Grande do Sul), E Paraguay (Canendiyú, Alto Paraná) and NE Argentina (Misiones).



**Descriptive notes.** 12-13 cm; 13-15 g. Small furnariid closely resembling a xenops. Nominate race has broad golden-buff supercilium, sharply defined blackish-brown postocular band becoming slightly paler posteriorly, extending to hindneck; auriculars dull buff, lores grizzled dark brownish and ochraceous buff; side of neck yellowish-buff; crown blackish-brown with broad golden-olive streaks, these extending to centre of hindneck; buff partial collar formed by extension of colour of supercilium and neck side towards centre of upper back; rest of back and rump dull olive-brown, uppertail-coverts tipped rufous; wings olive-brown, darker primary coverts, remiges faintly tinged rufescent; tail nearly square, rectrices not appreciably stiffened, tips somewhat pointed and distal 1 mm without barbs, dark rufous; throat pale yellowish-buff; breast paler with dull olive-brown streaks, fading in dull olive-brown belly, undertail-coverts dull brownish

with very broad rufous streaks; iris dark brown; upper mandible mostly brown to black, lower mandible pinkish-grey; tarsus and toes greenish-grey to dull yellow-green. Sexes alike. Juvenile has markings less distinct, supercilium and streaking more ochraceous. Race *camargoi* has broad pale golden-buff shaft streaks on back that fade posteriorly, broader and more extensive streaks on lower breast and belly, also significantly shorter wing and tail. **Voice.** Song a short, harsh, metallic slow trill on one pitch, sometimes interspersed with squeaky notes or tinkling overtones; call note a soft "tick".

**Habitat.** Montane and tropical lowland evergreen forest; from near sea-level to 1830 m.

**Food and Feeding.** Arthropods. Forages singly or in pairs, usually in mixed-species flocks, from mid-storey to canopy, often in dense vine tangles; occasionally down to understorey. Acrobatically gleans, pecks and pulls food items from mossy branches, leaves and epiphytes; uses climbing and hanging manoeuvres, but evidently does not use tail for support.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common in much of its range; rare in Paraguay. In Brazil, fairly common in Aparados da Serra and Serra dos Órgãos National Parks and uncommon in Itatiaia National Park; present in Matas dos Godé State Park. In Paraguay, present in San Rafael National Park. Extensive deforestation within its relatively small range has dramatically reduced area of available habitat.

**Bibliography.** dos Anjos & Boçon (1999), dos Anjos *et al.* (1997), Belton (1984), Brooks *et al.* (1993), Canevari *et al.* (1991), Cordeiro (2001), Cory & Hellmayr (1925), Goerck (1999a), Hayes (1995), Madroño, Clay *et al.* (1997), Mazar Barnett & Pearman (2011), Mitchell (1957), Narosky *et al.* (1983), Navas & Bó (1988), Olrog (1963a), Parker & Goerck (1997), de la Peña (1988), Pinto (1954b, 1978), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993, 1997), da Silva & Stotz (1992), Slud (1964), Stotz *et al.* (1996), Vaurie (1971b), Willis & Schuchmann (1993).

### Genus *XENOPS* Illiger, 1811

#### 231. Rufous-tailed Xenops

##### *Xenops milleri*

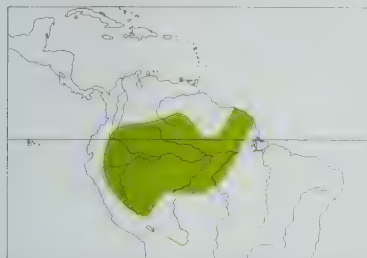
**French:** Sittine à queue rousse **German:** Rotschwanz-Baumspäher **Spanish:** Picolezna Colirrufo  
**Other common names:** Miller's Xenops

**Taxonomy.** *Microxenops milleri* Chapman, 1914, foot of Mount Duida, 700 feet [c. 210 m], Amazonas, Venezuela.

Formerly placed in monotypic genus *Microxenops*; differs from current congeners in lacking laterally compressed, wedge-shaped bill, black in tail and pale malar mark, also in leg colour, but shares with them a conspicuous wingband. Monotypic.



**Distribution.** SE Colombia (S from Meta and Vaupés), S Venezuela (Amazonas, S Bolívar), Surinam and French Guiana S to Amazonian Brazil (S to N Rondônia and SW Pará), E Ecuador, E Peru and NW Bolivia (Pando, extreme NW La Paz).



**Descriptive notes.** 10–11 cm; 12–13 g. Tiny furnariid, more like a miniature *Heliobletus contaminatus* than like its congeners. Has buff supercilium with dark flecking above eye, blackish-brown postocular band, blackish-brown auriculars with golden-buff flammulations; crown blackish-brown with conspicuous golden-buff shaft streaks; back dark rufescent brown with wide buff shaft streaks, these fading posteriorly, blending to more rufescent rump and uppertail-coverts; wing-coverts blackish with rufescent brown margins, blackish-brown primary coverts, blackish remiges with broad rufous wingband visible at base; tail nearly square, rectrices without appreciable shaft stiffening and rounded tips, dark rufous; chin pale yellowish-buff, blending to throat and malar area with dark olive flecks and stripes, these increasing in breadth and integrity posteriorly, leading into brighter buff breast with well-defined but narrow dark olive-brown streaks, these fading posteriorly; belly bright golden-buff with dense but light brownish streaking; flanks darker with fewer streaks, undertail-coverts like belly and flanks but streaked light ochraceous brown; iris brown to dark brown; upper mandible black to brownish, lower mandible blue-grey to leaden blue; tarsus and toes yellowish-brown to olive. Sexes alike. Juvenile undescribed. **Voice.** Song a very fast, high, ascending trill, becoming louder, then fading and descending, duration c. 2 seconds; call undescribed.

**Habitat.** Tropical lowland and flooded evergreen forest; mainly *terra firme*, locally also *várzea* forest. From near sea-level to 600 m, locally to 1000 m.

**Food and Feeding.** Arthropods; Orthoptera recorded. Usually seen singly, in mixed-species flocks, in canopy and subcanopy. Rapidly hitches along slender branches, mostly horizontal or inclined, mostly 2–8 cm in diameter, often in vine tangles, with side-to-side searching motion; hangs down to search sides and undersides of branches; tail rarely (if ever) used for support. Gleans food items from bark, moss and dead leaves; data so far indicate that it does not hammer bark as do others of genus.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare to locally fairly common. Patchy distribution probably at least in part an artifact of difficulty in detection. Occurs in numerous protected areas, including Amacayacu National Park, in Colombia, Cuyabeno Reserve, in Ecuador, and Tambopata-Candamo Reserved Zone, in Peru.

**Bibliography.** Chapman (1917), Cory & Hellmayr (1925), Foster *et al.* (1994), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Parker (1982), Parker & Bailey (1991), Parker & Hoke (2002), Parker, Castillo *et al.* (1991), Parker, Parker & Plenge (1982), Pinto (1978), Remsen & Robinson (1990), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robbins *et al.* (1991), Rodner *et al.* (2000), Sick (1993, 1997), Skutch (1985), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stotz, Pequeño *et al.* (2002), Terborgh *et al.* (1984), Tostain *et al.* (1992), Vaurie (1971b), Zimmer *et al.* (1997).

## 232. Slender-billed Xenops

### *Xenops tenuirostris*

**French:** Sittine des rameaux

**German:** Streifenschwanz-Baumspäher

**Spanish:** Pícolzna Picofino

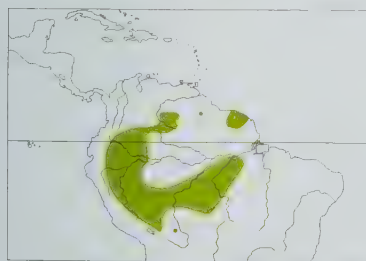
**Taxonomy.** *Xenops tenuirostris* Pelzel, 1859, Salto do Jirau, Rio Madeira, Rondônia, Brazil. Racial assignment of birds from Venezuela tentative; currently included in *acutirostris* but apparently unlike typical specimens of that race; specimens from Guyana also included with *acutirostris* but possibly belong to *hellmayri*; further research required. Three subspecies recognized.

#### Subspecies and Distribution.

*X. t. acutirostris* Chapman, 1923 - W Guyana, S Venezuela (S Amazonas, Bolívar) and SE Colombia (S from Caquetá and Vaupés) S to NE Peru.

*X. t. hellmayri* Todd, 1925 - Surinam and French Guiana.

*X. t. tenuirostris* Pelzel, 1859 - SE Peru, Amazonian Brazil (S of R Amazon) and N Bolivia (Pando, NW La Paz, N Santa Cruz).



**Descriptive notes.** 10 cm; 9–11 g. Wedge-shaped bill relatively longer and thinner and streaking generally finer than in congeners. Nominate race has narrow buffish-white supercilium, blackish-brown postocular band, blackish-brown auriculars with dull buff flammulations; short malar streak gleaming white; crown dark brown, dull buff spotting on forecrown becoming narrow streaks on rest of crown; back rufescent brown with short, broad creamy buff spot-like streaks, these quickly vanishing on lower back; rump and uppertail-coverts reddish-rufous; wing-coverts dark brown with rufous margins, remiges

blackish-brown with rufous wingband showing broadly near bases; tail nearly square, shafts without appreciable stiffening, tips more or less rounded, outer and central pairs of rectrices rufous, others a striking complex mix of black and rufous; chin dull pale buff, blending to throat with dull olive-brown streaking along lower margin; breast dull olive-brown with well-defined pale buff streaks, belly like breast but streaks much narrower, fading posteriorly; undertail-coverts dull olive-brown with broad pale buff shaft streaks; iris brown to dark brown; upper mandible black, sometimes dark brownish, lower mandible black with creamy grey to pinkish base; tarsus and toes dark blue-grey to black. Sexes alike. Juvenile undescribed. Race *acutirostris* has back slightly darker with larger streaks, underparts slightly darker, more greyish-olive, with broader, more sharply defined whitish streaks, bill more slender and not so recurved; *hellmayri* is evidently like nominate, but crown slightly darker and more distinctly streaked, supercilium, neck and throat bright

buff (not whitish), underparts more brownish. **Voice.** Song a series of 4–5 dry “tsip” notes on same pitch.

**Habitat.** Tropical lowland and flooded evergreen forest; mostly sea-level to 600 m, locally to 1500 m.

**Food and Feeding.** Arthropods; Orthoptera recorded. Usually forages singly, in mixed-species flocks, in canopy and subcanopy. Climbs and hitches up and along slender branches, often using tail for support. Hammers, chisels and gleans bark and dead wood.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare to locally uncommon. Not well known. Occurs in numerous protected areas, e.g. Manu National Park and Biosphere Reserve, in Peru.

**Bibliography.** Angehr & Aucca (1997), Braun *et al.* (2003), Chapman (1917, 1926), Cory & Hellmayr (1925), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Meyer de Schauensee (1945), Parker & Hoke (2002), Parker *et al.* (1982), Pinto (1978), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Skutch (1985), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stotz, Pequeño *et al.* (2002), Tostain *et al.* (1992), Vaurie (1971b), Willis & Oniki (1990), Zimmer, J.T. (1936c), Zimmer, K.J. & Hilty (1997), Zimmer, K.J. *et al.* (1997).

## 233. Plain Xenops

### *Xenops minutus*

**French:** Sittine brune

**German:** Braunbauch-Baumspäher

**Spanish:** Pícolzna Menudo

**Taxonomy.** *Turdus minutus* Sparrman, 1788, no locality = Rio de Janeiro, Brazil.

Smaller and pale-throated nominate race distinctive, possibly a separate species from others. Apparent geographical variation in song requires further study; several species may be involved. Thorough analysis may reveal that variation in Central America is clinal; proposed race *cayoensis* (from Belize) considered not diagnosable; Honduran populations of *mexicanus* approach *ridgwayi* in most characters, and latter is very like *littoralis*. Sight records from NW Peru (Tumbes) presumed to refer to last-mentioned race. Race *remoratus* intergrades with *ruficaudus* in S Venezuela (R Casiquiare region). Ten subspecies tentatively recognized.

#### Subspecies and Distribution.

*X. m. mexicanus* P. L. Sclater, 1857 - S Mexico (from Veracruz) S to Honduras.

*X. m. ridgwayi* Hartert & Goodson, 1917 - Nicaragua S to C Panama.

*X. m. littoralis* P. L. Sclater, 1862 - E Panama (Darién) and N Colombia (E to Cauca and Magdalena valleys) S to W Ecuador and extreme NW Peru (Tumbes).

*X. m. olivaceus* Avelado & Pons, 1952 - Perijá Mts of NE Colombia and NW Venezuela.

*X. m. neglectus* Todd, 1913 - NE Colombia (S to Cundinamarca) and NW Venezuela (E to Miranda).

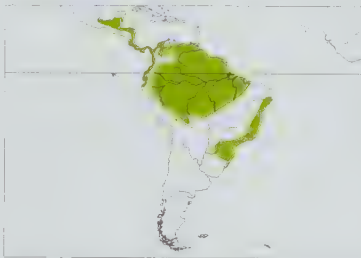
*X. m. remoratus* J. T. Zimmer, 1935 - E Colombia (E from Meta and Caquetá), SW Venezuela (SW Amazonas) and NW Brazil (NW Amazonas).

*X. m. ruficaudus* (Vieillot, 1816) - E Colombia (Vichada), S & E Venezuela (Amazonas and Bolívar E to Paria Peninsula), the Guianas and N Brazil (E of R Negro).

*X. m. obsoletus* J. T. Zimmer, 1924 - E Ecuador, E Peru, W Brazil (S of R Amazon, E to R Madeira) and N Bolivia (S to N Santa Cruz).

*X. m. genibarbis* Illiger, 1811 - C Brazil (R Madeira E to Piauí, S to S Mato Grosso and N Goiás).

*X. m. minutus* (Sparrman, 1788) - E & SE Brazil (Pernambuco S to Santa Catarina), E Paraguay (E from Canendiyú, Caaguazú) and NE Argentina (Misiones).



**Descriptive notes.** 11–12 cm; 9–13 g. Short, wedge-shaped bill; the only member of genus without prominent streaking and with graduated tail. Nominate race has buffish-white supercilium and weak eyering, blackish-brown auriculars variably flammulated with dull buff; gleaming white posterior malar streak emphasized by blackish border, anterior portion buff with some blackish-brown bases showing through; crown rather dark warm brown with faint paler brown shaft streaks; back and rump slightly paler, tinged rufescent, blending to dull dark rufous uppertail-coverts; wing-coverts rich brown with blackish centres, blackish primary coverts with rufous-tawny outer webs, remiges blackish-brown with broad rufous-tawny wingband near base; tail slightly graduated, shafts without appreciable stiffening, tips rounded, outer and central pairs of rectrices rufous, others a striking complex mix of black and rufous; throat white, hint of dull brownish streaks beginning along lower margin; underparts medium brown, deeper and richer on sides, flanks and undertail-coverts, short, blurry buff streaking on upper breast; iris brown to dark brown; upper mandible black to brownish-horn, lower mandible ivory to pinkish or greyish at base, blending to dark grey tip; tarsus and toes dark grey to blue-grey. Sexes alike. Juvenile has slightly less distinct pattern throughout, throat slightly clouded greyish. All races are substantially larger than nominate, with proportionately larger bill, darker throat, more heavily marked breast; *genibarbis* has throat feathers edged olivaceous rather than cleanly whitish, wingband darker ochraceous; *obsoletus* is like previous, but crown less rufescent and with paler broader streaks, lower back more olivaceous, tail slightly paler rufous, throat slightly more heavily edged with brownish, breast spotting more extensive (differs from next in being more olivaceous above, head not distinctly darker than back and with narrower streaks, rump brighter than back, central rectrices paler, underparts slightly duller with narrow breast markings); *ruficaudus* has crown darker, less rufescent, with distinct narrow buff shaft streaks, underparts more olivaceous, neck and upper breast more heavily spotted, more pronounced brownish edges on throat feathers; *remoratus* differs from last in generally duller colour, crown not conspicuously streaked, breast markings less sharply defined; *neglectus* differs from previous (and other races to E) in having slight yellowish tinge on throat, more olivaceous underparts; *olivaceus* is described as very similar to last but even more olivaceous, less greyish-brown, below; *littoralis* differs from it evidently only in being slightly darker throughout (differs from nearest Amazonian races in having more extensive white on throat, breast streaks extending farther down); *ridgwayi* differs from previous in having more rufescent rump and uppertail-coverts; *mexicanus* differs from last in having back and crown slightly more rufescent, rump and uppertail-coverts brighter, more intense chestnut-rufous, throat whiter, less yellowish-tinged, breast and belly tinged rufescent (less olivaceous). **Voice.** Song a series of 8–10 high, staccato “sweet” or “pseep” notes, slightly ascending and then descending, accelerating and then decelerating; race *littoralis* song faster (compared with Amazonian races), ascending “tsi”



notes; *mexicanus* described as high-pitched, rapid, liquid trill, introduced by 1-4 "pip" notes; *ridgwayi* as rattling trill, slowing at end, often introduced by 1-2 call notes, often repeated. Calls described as fine, sharp "pee" or "peet" and thin "tseep" or "tsiss".

**Habitat.** Tropical lowland and flooded evergreen forest; locally in tropical deciduous forest and gallery forest. From near sea-level to 1000 m, locally to 1500 m.

**Food and Feeding.** Recorded dietary items are insect eggs, termites (Isopoda), spiders, ants and their larvae, other Hymenoptera, Dermaptera, katydids (Tettigoniidae), millipedes (Diplopoda), and Coleoptera (Xylopidae). Forages usually singly, sometimes in pairs, usually in mixed-species flocks, in understorey. Climbs and hitches up and along branches (perhaps especially woody vines) usually 2-10 cm in diameter, sometimes using tail for support; often along underside of branch, or hanging downwards; frequently forages at broken-off terminal tips of branches, including downward-hanging ones. Acrobatically hammers, chisels and gleans bark and dead wood, and occasionally dead leaves. Many manoeuvres directed at opening decaying twigs, often those caught up in branches by vine tendrils attached to them, sometimes large, dead leaf petioles, to reach adult and larval insects in centre; lengthens openings in such twigs by inserting bill and pushing forwards.

**Breeding.** Season Dec to at least Jun in Costa Rica and Panama, also active nest in Sept (Panama); possibly two broods per year. Monogamous. Nest-hole excavated by pair in soft decaying wood of tree branch or trunk, mostly 3-10 m up, nest-chamber lined with soft plant fibres; holes made by other species, e.g. piculets (*Picumnus*) also used; estimated territory size 9 ha in transitional forest in SE Peru. Clutch 2 eggs; incubation by both sexes, period 15-17 days; chicks fed by both parents, nestling period 13-14 days.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to common in most of its huge range. Estimated densities of 12-30 birds/km<sup>2</sup> in transitional forest in SE Peru and 8-13/km<sup>2</sup> in *terra firme* forest in French Guiana. Occurs in numerous protected areas throughout its extensive range. In some areas tends to disappear from disturbed forests, but in others appears tolerant of some disturbance.

**Bibliography.** dos Anjos *et al.* (1997), Anon. (1998a), Avelado & Pons (1952), Binford (1989), Canevari *et al.* (1991), Chapman (1971), Chehez (1994), Cory & Hellmayr (1925), Foster *et al.* (1994), Graves & Zusi (1990), Greenberg & Gradwohl (1985), Haverschmidt & Mees (1994), Hayes (1995), Hilty (1997, 2003a), Hilty & Brown (1986), Howell & Webb (1995a), Mazar Barnett & Pearman (2001), Meyer de Schauensee (1945, 1959), Monroe (1968), Munn (1985), Narosky *et al.* (1983), Parker & Bailey (1991), Parker & Carr (1992), Parker & Goerck (1997), Parker, Holst *et al.* (1994), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1995), de la Peña (1988), Pinto (1978), Rappole & Morton (1985), Remsen (2003a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Robbins & Ridgely (1990), Robbins *et al.* (1985), Robinson, S.K. & Terborgh (1997), Robinson, S.K. *et al.* (1990), Robinson, W.D. *et al.* (1999), Rodner *et al.* (2000), Russell (1964), Schubert *et al.* (1965), Schulenberg (2002), Schulenberg *et al.* (2001), Scott & Brooke (1985), Sick (1993, 1997), da Silva, Lima & Marceliano (1990), da Silva, Oren *et al.* (1997), Skutch (1969c, 1985), Slud (1960, 1964), Snyder (1985), Stiles & Skutch (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1994), Todd & Carriker (1922b), Tostain *et al.* (1992), Vaurie (1971b), Veree *et al.* (1999), Wetmore (1972), Willis (1960a, 1980), Willis & Eisenmann (1979), Winker *et al.* (1994), Zimmer (1930, 1935b, 1936c).

## 234. Streaked Xenops

### *Xenops rutilans*

**French:** Sittine striée **German:** Strichelscheitel-Baumspäher **Spanish:** Picolesna Rojizo

**Taxonomy.** *Xenops rutilans* Temminck, 1821, Brazil.

Geographical variation over species' large range slight, despite number of named races; in fact, there seems to be more variation within nominate than among many of proposed races. Highly likely that many or most races are not diagnosable; majority were described from few specimens and few localities, and many of the characters used to define them seem invalid. Racial identity of birds from extreme E Peru and NE Bolivia (Pando) and others from extreme E & SE of latter country uncertain: the first are tentatively included with *purusianus* and the second with *connectens*. Listed distributions of several races should be interpreted with caution. Eleven subspecies very tentatively recognized.

**Subspecies and Distribution.**

*X. r. septentrionalis* J. T. Zimmer, 1929 - Costa Rica and W Panama (W Chiriquí).

*X. r. incomptus* Wetmore, 1970 - extreme E Panama (Cerro Pirre).

*X. r. phelpsi* Meyer de Schauensee, 1959 - Santa Marta Mts, in N Colombia.

*X. r. perijanus* Phelps, Sr. & Phelps, Jr., 1954 - Perijá Mts, and E Andes of W Venezuela (S Táchira) and NE Colombia (Santander).

*X. r. heterurus* Cabanis & Heine, 1859 - N Venezuela (E to Paria Peninsula), Trinidad, and E Andes from Colombia (S from Cundinamarca) S to NE Ecuador.

*X. r. guayae* Hellmayr, 1920 - lowlands of W Ecuador (S from Esmeraldas) and NW Peru (Tumbes, Piura).

*X. r. peruvianus* J. T. Zimmer, 1935 - Andean foothills in Ecuador and Peru (S to Puno).

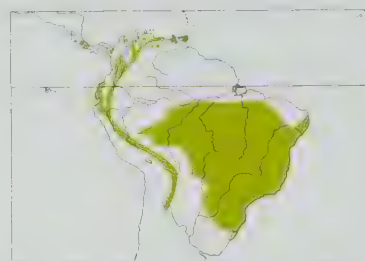
*X. r. purusianus* Todd, 1925 - extreme E Peru, C Brazil (R Purús E to R Tapajós) and NE Bolivia (Pando).

*X. r. connectens* Chapman, 1919 - foothills from Bolivia (S from La Paz, also in extreme E & SE) S to NW Argentina (S to Tucumán).

*X. r. chapadensis* J. T. Zimmer, 1935 - E Bolivia (Beni) and SW Brazil (Rondônia and Mato Grosso E to Maranhão, Piauí and Goiás).

*X. r. rutilans* Temminck, 1821 - SE Brazil (S from Bahia and Minas Gerais) S to NC Paraguay and NE Argentina (Misiones, NE Corrientes).

**Descriptive notes.** 12 cm; 10-15 g. Along with *X. milleri* the most broadly streaked member of genus, also with short, thick, wedge-shaped bill. Nominative race has conspicuous pale buff supercilium, blackish-brown postocular band, dark brownish auriculars with dull buff streaking, lores grizzled blackish and dull grey-buff; malar streak gleaming white, emphasized by dark brownish borders, anterior malar yellow-buff; crown dark brown with conspicuous rufous shafts streaks; back rufescent brown with inconspicuous paler rufous streaks that fade posteriorly, rump and uppertail-coverts chestnut-rufous; wing-coverts rufescent brown with darker inner webs, primary coverts very dark brown with outer edges rufescent brown, remiges dark fuscous with outer webs tinged rufous (central remiges rufous only at base and tip); tail nearly square, shafts not stiffened and tips almost rounded, chestnut-rufous, with blackish on inner web of rectrix 3; throat and centre of uppermost breast whitish, mottled; rest of breast and belly with broad buffy whitish streaks outlined with dark brownish, streaks narrow and fading (with paler brown outlining) on lower belly and flanks, flanks tinged rufescent; iris brown to dark brown; upper mandible dark brown to blackish, lower mandible whitish to pinkish-grey, often with blackish tip; tarsus and toes grey to black. Sexes alike. Juvenile has less distinct pattern throughout, dark areas of tail not so black, pale area of throat slightly clouded greyish and more restricted. Race *chapadensis* is like nominate, but



in having no black in tail (except at concealed bases), also pale areas of throat, breast and belly faintly tinged yellowish (less pure white), olive-brown portions of underparts brighter, more buff-tinged; *guayae* is tawnier, more ochraceous buff below than any other race; *phelpsi* is described as most like previous but less heavily streaked; *perijanus* differs from last in duller upperparts, more black on third rectrix, more greyish-olive (less brownish) underparts; *incomptus* (perhaps known only from two specimens) is described as being smaller, streaking above and below reduced and narrow, upperparts deeper cinnamon (especially rump and tail-coverts), underparts grey-toned; *septentrionalis* has slightly duller, less rufescent underparts and back than *peruvianus*. **VOICE.** Song an ascending and then descending, high-pitched series of 5-10 dry, squeaky "swee" or "zeet" notes, accelerating at end, sometimes (possibly only in Trinidad) with emphatic terminal note. Call a high, piercing "peet" or "cheet".

**Habitat.** In Andes mainly montane evergreen forest and hilly deciduous forest, at 700-2400 m (locally to 2800 m); in lowlands a variety of humid to semi-arid forest and woodland types, from tropical deciduous forest to tropical lowland evergreen forest, including second growth. In Middle America habitat range similar, and mainly 540-2450 m.

**Food and Feeding.** Arthropods; Coleoptera larvae recorded. Forages singly or in pairs, often to usually in mixed-species flocks, from understorey (at edge) to subcanopy. Climbs and hitches up, along and under slender branches, mostly less than 10 cm in diameter, sometimes using tail for support. Acrobatically gleans, hammers, chisels, and flakes bark and decaying wood.

**Breeding.** Season Jan-May in Costa Rica; breeding recorded Feb-May, with eggs in May, in Trinidad. Presumably monogamous. Nest consists of only a few root fibres or shredded plant fibres, placed in natural cavity or in old hole of piculet (*Picumnus*), or cavity excavated in soft wood, 1.5-9 m up in tree. Clutch 2-3 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common in most of its range. Densities estimated at 8 birds/km<sup>2</sup> in transitional forest in SE Peru; estimated at 34/km<sup>2</sup> in forest reserve in SE Brazil, declining to 7/km<sup>2</sup> in small forest fragments. Occurs in numerous protected areas throughout its extensive range. Appears fairly tolerant of habitat disturbance; survives in small and degraded forest fragments, although in some cases at lower densities.

**Bibliography.** dos Anjos *et al.* (1997), Anon. (1998a), Belcher & Smoother (1936), Belton (1984), Bond (1945), Canevari *et al.* (1991), Chapman (1971, 1926), Cory & Hellmayr (1925), French (1991), Fjeldså & Krabbe (1990), Fjeldså & Majer (1996), Foster *et al.* (1994), Gyldestolpe (1945b, 1951), Haverschmidt & Mees (1994), Hayes (1995), Hayes *et al.* (1990), Hilty (2003a), Hilty & Brown (1986), Mazar Barnett & Pearman (2001), Meyer de Schauensee (1959), Miller (1963), Munn (1985), Narosky *et al.* (1983), Olrog (1963a), Parker & Carr (1992), Parker & Goerck (1997), Parker, Gentry *et al.* (1993), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1995), Parrini *et al.* (1999), de la Peña (1988), Peters & Griswold (1943), Phelps & Phelps (1954, 1955), Pinto (1948, 1978), Pinto & Camargo (1952), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Rodner *et al.* (2000), Scott & Brooke (1985), Sick (1993, 1997), Skutch (1985), Slud (1964), Stiles (1985), Stiles & Skutch (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Taczanowski (1884), Terborgh *et al.* (1984), Tostain *et al.* (1992), Vaurie (1971b), Walker (2001), Wetmore (1970, 1972), Wiedenfeld *et al.* (1985), Zimmer (1930, 1935b, 1936c), Zotta (1938).

## Genus MEGAXENOPS Reiser, 1905

### 235. Great Xenops

#### *Megaxenops paraguayae*

**French:** Mégasittine du Brésil **German:** Zimtrotter Baumspäher **Spanish:** Picolesna Grande  
**Other common names:** Reiser's Recurvebill

**Taxonomy.** *Megaxenops paraguayae* Reiser, 1905, caatinga woods on the trail from Parnaguá to Olho d'Água, Piauí, Brazil.

No obvious close relationships. Although traditionally placed near *Xenops*, this evidently based solely on wedge-shaped bill; foraging behaviour suggests that it is closer to *Philydor* or *Syndactyla*. Monotypic.

**Distribution.** E Brazil, from Piauí, Ceará and W Pernambuco S to W Bahia and NW Minas Gerais.



reasonably sharply demarcated from light orange-rufous underparts, slightly darker on rear flanks, slightly darker and more rufous undertail-coverts; iris dark brown; bill dusky brownish-grey, at least basal half of lower mandible whitish; tarsus and toes dark grey to black. Sexes alike. Juvenile

has more rufescent upperparts, paler and browner margins of white streaks on underparts; *connectens* has much duller, less rufescent upperparts, more olivaceous and less broadly streaked underparts (more like next in general coloration); *heterurus* is duller and less broadly streaked, evidently differs from most others in having inner webs of rectrices 3 and 4 almost entirely black, and some black at base of rectrix 5; *purusianus* is described as similar to previous race but paler and more broadly streaked whitish below, also has throat more conspicuously edged brownish than nominate; *peruvianus* is described as differing from last

in having no black in tail (except at concealed bases), also pale areas of throat, breast and belly faintly tinged yellowish (less pure white), olive-brown portions of underparts brighter, more buff-tinged; *guayae* is tawnier, more ochraceous buff below than any other race; *phelpsi* is described as most like previous but less heavily streaked; *perijanus* differs from last in duller upperparts, more black on third rectrix, more greyish-olive (less brownish) underparts; *incomptus* (perhaps known only from two specimens) is described as being smaller, streaking above and below reduced and narrow, upperparts deeper cinnamon (especially rump and tail-coverts), underparts grey-toned; *septentrionalis* has slightly duller, less rufescent underparts and back than *peruvianus*. **VOICE.** Song an ascending and then descending, high-pitched series of 5-10 dry, squeaky "swee" or "zeet" notes, accelerating at end, sometimes (possibly only in Trinidad) with emphatic terminal note. Call a high, piercing "peet" or "cheet".

**Habitat.** In Andes mainly montane evergreen forest and hilly deciduous forest, at 700-2400 m (locally to 2800 m); in lowlands a variety of humid to semi-arid forest and woodland types, from tropical deciduous forest to tropical lowland evergreen forest, including second growth. In Middle America habitat range similar, and mainly 540-2450 m.

**Food and Feeding.** Arthropods; Coleoptera larvae recorded. Forages singly or in pairs, often to usually in mixed-species flocks, from understorey (at edge) to subcanopy. Climbs and hitches up, along and under slender branches, mostly less than 10 cm in diameter, sometimes using tail for support. Acrobatically gleans, hammers, chisels, and flakes bark and decaying wood.

**Breeding.** Season Jan-May in Costa Rica; breeding recorded Feb-May, with eggs in May, in Trinidad. Presumably monogamous. Nest consists of only a few root fibres or shredded plant fibres, placed in natural cavity or in old hole of piculet (*Picumnus*), or cavity excavated in soft wood, 1.5-9 m up in tree. Clutch 2-3 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common in most of its range. Densities estimated at 8 birds/km<sup>2</sup> in transitional forest in SE Peru; estimated at 34/km<sup>2</sup> in forest reserve in SE Brazil, declining to 7/km<sup>2</sup> in small forest fragments. Occurs in numerous protected areas throughout its extensive range. Appears fairly tolerant of habitat disturbance; survives in small and degraded forest fragments, although in some cases at lower densities.

**Bibliography.** dos Anjos *et al.* (1997), Anon. (1998a), Belcher & Smoother (1936), Belton (1984), Bond (1945), Canevari *et al.* (1991), Chapman (1971, 1926), Cory & Hellmayr (1925), French (1991), Fjeldså & Krabbe (1990), Fjeldså & Majer (1996), Foster *et al.* (1994), Gyldestolpe (1945b, 1951), Haverschmidt & Mees (1994), Hayes (1995), Hayes *et al.* (1990), Hilty (2003a), Hilty & Brown (1986), Mazar Barnett & Pearman (2001), Meyer de Schauensee (1959), Miller (1963), Munn (1985), Narosky *et al.* (1983), Olrog (1963a), Parker & Carr (1992), Parker & Goerck (1997), Parker, Gentry *et al.* (1993), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1995), Parrini *et al.* (1999), de la Peña (1988), Peters & Griswold (1943), Phelps & Phelps (1954, 1955), Pinto (1948, 1978), Pinto & Camargo (1952), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Rodner *et al.* (2000), Scott & Brooke (1985), Sick (1993, 1997), Skutch (1985), Slud (1964), Stiles (1985), Stiles & Skutch (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Taczanowski (1884), Terborgh *et al.* (1984), Tostain *et al.* (1992), Vaurie (1971b), Walker (2001), Wetmore (1970, 1972), Wiedenfeld *et al.* (1985), Zimmer (1930, 1935b, 1936c), Zotta (1938).



undescribed. **VOICE.** Song a series of bubbly notes that start slowly and quietly, then accelerate and rise in pitch, trailing away at end, lasting c. 3 seconds; also described as 3-4 descending “kiak” notes, sometimes in short series with guttural terminal “gro” notes.

**Habitat.** *Caatinga* and semi-humid woodland and forest; from possibly 200 m to 1100 m.

**Food and Feeding.** Recorded dietary items are Formicidae, beetles (Scarabaeidae), larval Lepidoptera, and arachnids (*Ctenus*, *Micrathena*, *Phoneutria*). Forages solitarily or in pairs, usually or often in mixed-species flocks. Works along branches; unlike *Xenops*, does not climb, hitch, or use tail for support. Searches live leaves, dead leaves and bark; occasionally pries, pulls and chisels bark, but not known to hammer bark and dead wood. One observation of bird investigating termite (Isoptera) nest, sometimes hanging upside-down.

**Breeding.** No information.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Rare to locally fairly common. Present in Serra da Capivara National Park (Piauí), Chapada do Araripe National Forest (Ceará) and Cavernas do Peruaçu National Park (Minas Gerais). Deforestation has dramatically reduced populations, even to point of local extinction, in some parts of range. Nevertheless, has more extensive range and broader habitat tolerance than was believed in early 1990s; tolerates a certain degree of habitat degradation, including disturbance and heavy grazing, and observed to forage in burnt areas.

**Bibliography.** de Andrade (1990), Bernardes *et al.* (1990), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cory & Hellmayr (1925), Hellmayr (1929b), Kirwan *et al.* (2001), do Nascimento *et al.* (2000), Olmos (1993), Parrini *et al.* (1999), Pinto (1978), Pinto & Camargo (1961), Ridgely & Tudor (1994), Siek (1993, 1997), Siek *et al.* (1987), Stotz *et al.* (1996), Teixeira (1989), Teixeira, Nacinovic & Luigi (1989), Teixeira, Nacinovic & Schloemp (1991), Wege & Long (1995), Williams (1995a).

Genus *PYGARRHICHAS* Burmeister, 1837

236. White-throated Treerunner

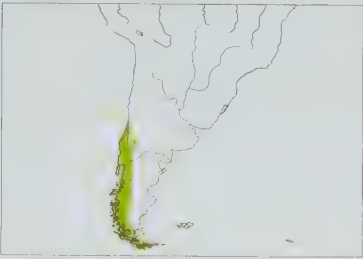
*Pygarrhichas albogularis*

**French:** Picotelle à gorge blanche **German:** Kleiberbaumspäher **Spanish:** Picolezna Comesebo

**Taxonomy.** *Dendrocolaptes albo-gularis* P. P. King, 1831, no locality = presumably Strait of Magellan, Chile.

Traditionally placed near *Xenops* and other bark-gleaning furnariids, but plumage and biogeography suggest that such a relationship unlikely and that any similarities are due to convergence. Possible relationship to *Aphrastura* suggested by superficial plumage similarities and details of foraging behaviour. Monotypic.

**Distribution.** C & S Chile (from Santiago) and W Argentina (from Mendoza) S to Tierra del Fuego.



**Descriptive notes.** 15-16 cm; 20-27 g. Distinctive, reminiscent of a nuthatch (*Sitta*) in plumage and shape, with ventral pattern unlike that of any other furnariid. Has blackish-brown face, slightly darker than crown; crown dark dull brown, blending to slightly paler back, variably tinged chestnut, and to rufous-chestnut rump and uppertail-coverts; wing-coverts dark brown, variably edged chestnut to rufous (broadly at tips), darker primary coverts, remiges very dark with narrow ochraceous to rufous edges of variable length (broader on bases of tertials), bright chestnut-rufous short wingband on inner primaries; tail rounded, shafts notably stiffened

throughout length, tips with prominent “spines” up to 9 mm long and greatly reduced barbs, rufous-chestnut; throat, broad malar area and upper breast bright white, side of lower breast dark brown; centre of lower breast with dark brown margins producing irregularly scalloped effect, belly similar with fading darker feather margins; flanks broadly dull chestnut with blackish feather bases and some whitish flecking, vent whitish with broad dark brown feather margins, undertail-coverts whitish with broad chestnut and blackish margins; iris dark brown; upper mandible dark horn to dark grey, lower mandible mostly whitish to pale greyish; tarsus and toes dark grey to blackish or brown. Sexes alike. Juvenile has crown and back heavily streaked with ochraceous, often blackish margins on some throat feathers. **VOICE.** Contact call described as loud, agitated, metallic “kik-ik”, “tsi-dik” or “tsik”, often repeated rapidly; loud “peet peet” also given; flight call dry “tick”.

**Habitat.** Tall, humid to semi-humid forest dominated by *Nothofagus*; sea-level to 1200 m.

**Food and Feeding.** Arthropods; adult and larval Coleoptera recorded. Forages sometimes to usually singly, regularly to usually in mixed-species flocks with *Aphrastura spinicauda*, from understorey to canopy. Climbs and hitches up and along branches and trunks; manoeuvres generally similar to those of *Sitta* nuthatches (but very rarely with head down); often uses tail for brace, but also much foraging done with tail elevated from branch. Food items obtained by acrobatically gleaning, probing and chiselling on branches and moss.

**Breeding.** Season presumably during austral spring-summer; eggs in Nov-Dec and nestlings in Dec. Presumably monogamous. Nest-hole excavated in dead branch, usually 3-8 m above ground, cavity 25-40 cm deep, no lining other than wood chips created by excavating (but one report of nest lined with grass and feathers). Clutch 2-3 eggs.

**Movements.** Mainly resident; some wandering in non-breeding season.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common. Occurs in a number of protected areas in Chile, including Vicente Pérez Rosales, Puyehué, Nahuelbuta and Cerro La Campana National Parks; also present in Tierra del Fuego National Park, in Argentina.

**Bibliography.** Araya & Chester (1993), Canevari *et al.* (1991), Contreras (1975), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Grigera *et al.* (1996), Humphrey *et al.* (1970), Johnson (1967), Mazar Barnett & Pearman (2001), Narosky *et al.* (1983), Olog (1963a), de la Peña (1988), Philippi *et al.* (1954), Radboone (1935), Rasmussen *et al.* (1992), Ridgely & Tudor (1994), Short (1969a), Stotz *et al.* (1996), Vuilleumier (1967, 1985).

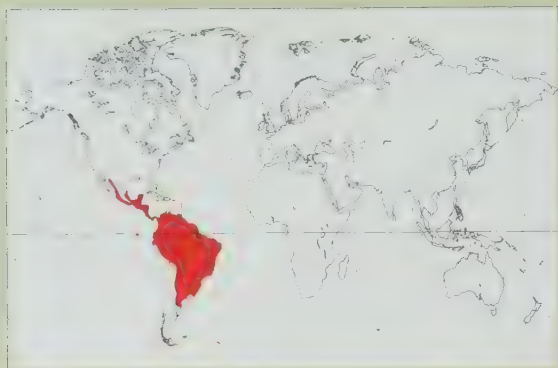


## Class AVES

## Order PASSERIFORMES

## Suborder FURNARIII

## Family DENDROCOLAPTIDAE (WOODCREEPERS)



- Small to medium-sized birds with broad rounded wings, long tail with rigid shafts, outer and middle toes united and much longer than inner toe, front claws strongly curved; most with brown plumage, a few grey to blackish, all with rufescent wings and tail.
- 13-36 cm.



- Neotropical Region.
- Forest and woodland, a few in semi-open habitats.
- 13 genera, 52 species, 270 taxa.
- 1 species threatened; none extinct since 1600.

**Systematics**

The woodcreepers (Dendrocolaptidae) are part of an endemic Neotropical group of birds known as the tracheophone suboscines. These primitive passerines, which are united by a tracheal syrinx of similar structure, have evolved a diverse array of ecological specializations. Most woodcreepers are specialized tree-climbers, extremely well adapted to an arboreal life. Not surprisingly, their centre of diversity lies in the rich, forested lowlands of the Amazon Basin, where up to 19 species occur together. Members of the family Dendrocolaptidae were formerly known as "woodhewers", a name derived from early accounts that referred to these birds as "picicules", meaning "little woodpeckers" (Picidae). This name, however, was abandoned in favour of one that more appropriately reflects their habits, which seldom include pecking or hammering in the manner of true woodpeckers.

As with most passerines, the fossil record of woodcreepers is scant, providing no insight into the age of their lineage. Only a few Quaternary fossils are known, all from two sites in Brazil. One of these is the Lapa da Escrivania, near Lagoa Santa, Minas Gerais, where one fossil from the Pleistocene, of the White-throated Woodcreeper (*Xiphocolaptes albicollis*), and two others, one Pleistocene and the other Holocene, of the Narrow-billed Woodcreeper (*Lepidocolaptes angustirostris*) have been discovered. According to H. Alvarenga, specimens of *Xiphocolaptes* species have been found at another site in Brazil. J. Cheneval's recent assertion that a middle Miocene fossil, *Homalopus picoides*, first discovered in the mid-nineteenth century at Sansan, in France, represents a dendrocolaptid must be viewed with caution. There is no evidence to suggest that tracheophone suboscines ever existed outside the New World. Any attempt to establish confidently that they did would require more than the extremely fragmentary material available, which includes only the distal end of a left tarsometatarsus and the proximal end of a right humerus. Although the fossil does show certain similarities to tree-climbing birds, S. L. Olson suggested that *Homalopus* might have been an oscine that was only convergently similar to suboscines. Molecular data clearly indicate that the woodcreepers diverged relatively recently from the ovenbirds (Furnariidae), with the split probably occurring during the Miocene.

Evidence from both morphology and molecular genetics strongly supports a monophyletic assemblage including both woodcreepers and ovenbirds, a much larger group of birds that has radiated into a highly diverse array of forms occupying a

variety of niches. This close relationship has resulted in the taxonomic rank of these two groups being unsettled, with many treatments combining them as one family, either under the name Dendrocolaptidae, as in older classifications, or under the name Furnariidae, as in more recent ones; in either case, the woodcreepers have consequently been ranked as a subfamily, the Dendrocolaptinae. Only these two avian families, Dendrocolaptidae and Furnariidae, possess two pairs of intrinsic muscles of the syrinx, the vocalis dorsalis being absent in other tracheophone suboscines. In addition, analyses of both DNA-DNA hybridization data and sequences of nuclear and mitochondrial DNA support the view that the woodcreepers and the ovenbirds form a closely related group that is distinct from other birds. Nevertheless, dendrocolaptids differ from furnariids in a number of features. Characters traditionally used to diagnose woodcreepers include horns on the processus vocalis of the syrinx, these horns lacking in all furnariids except the miners (*Geositta*); bony nostrils that are rounded and do not reach the posterior end of the premaxilla, a condition known as holorhinal; and outer and middle toes that are united at the base, of similar length, and noticeably longer than the inner toe. All woodcreepers share these features to a degree, but not all ovenbirds can be excluded by them. Notably, several "intermediate" woodcreeper genera, namely *Dendrocincla*, *Deconychura*, *Sittasomus* and *Glyphorhynchus*, exhibit a mixture of morphological characters, having some features of "typical" dendrocolaptids and others that are more typical of furnariids; for example, *Dendrocincla* and *Sittasomus* have narrower bony nostrils that resemble the pseudoschizorhinal condition of furnariids. Some authors, therefore, cite the aforementioned four dendrocolaptid genera as demonstrating a clear link between the ovenbirds and woodcreepers.

A diverse array of evidence indicates that all extant woodcreeper genera are more closely related to each other than they are to any furnariid. All dendrocolaptids share a particular configuration of their feather tracts (pterylosis) that distinguishes them from all other passerines. Further, they are unique among the passerines in having extensive ossification of the tendons of the hind limb, an adaptation to their tail-braced, scansorial habits that is reduced or more variable only in the genus *Dendrocincla*, the members of which less frequently adopt scansorial postures. *Platyacarus* feather mites are known to parasitize only woodcreepers, with documented hosts in every genus except the monotypic genera *Sittasomus*, *Glyphorhynchus* and *Drymornis*; this last, containing the Scimitar-billed Woodcreeper (*Drymornis*



*bridgesii*), retains many morphological characters, especially those of the limb muscles, that are primitive among woodcreepers (see Morphological Aspects). DNA-DNA hybridization data, coupled with phylogenetic analyses of various morphological and molecular characters, consistently yield results suggesting that, taken together, all dendrocolaptid genera comprise a monophyletic group. In contrast, Furnariidae appears not to be monophyletic with respect to woodcreepers.

The issue of whether to rank woodcreepers as a separate family has been tackled recently by M. Irestedt and colleagues, whose estimated phylogeny based on both nuclear and mitochondrial DNA suggested that the leaf-tossers (*Sclerurus*) are basal both to woodcreepers and to all other ovenbirds. Because of this arrangement, these authors recommended that the Furnariidae include three subfamilies: woodcreepers (Dendrocolaptinae), leaf-tossers (Sclerurinae), and all other ovenbirds (Furnariinae). An alternative classification, not mentioned by Irestedt and co-workers, would be to accord family rank to each of these groups. The placement of the woodcreepers in a family of their own seems the best course, because woodcreepers form a clearly diagnosable yet diverse group of species that share distinctive morphological and molecular traits. Moreover, incorporation of them within the ovenbird family would create too inclusive a group, comprising nearly 300 species, that obscures important evolutionary differences among its members.

Some scientists have speculated that it was in the vast Amazon Basin that the woodcreepers evolved from their supposed

nearest living relatives, the foliage-gleaners. In his monograph on the relationships of furnariids and dendrocolaptids, A. Feduccia postulated that, on the basis of similarities in anatomy, behaviour and geographical distribution, ancestral woodcreepers were foliage-gleaners that were capable of tree-climbing, an adaptation that may have greatly reduced competition for feeding space in mixed-species foraging flocks. According to this hypothesis, tree-climbing foliage-gleaners then experienced an extensive radiation in this new foraging space, leading eventually to modern woodcreepers.

Shortly after Feduccia's monograph, E. O. Willis, whose extensive observations of woodcreeper behaviour and ecology are perhaps unparalleled, suggested an alternative view of dendrocolaptid evolution. He noted that woodcreepers of the genus *Dendrocincla* and leaf-tossers of the ovenbird genus *Sclerurus* were strikingly similar in both appearance and behaviour. On this basis, he proposed that tree-climbing woodcreepers might have evolved from terrestrial leaf-tosser ancestors lured upwards to exploit food on bare tree trunks in forests, and perhaps driven there through competition with the evolving thamnophilid antbirds that now dominate ant-following flocks in the understorey. Under this scenario, the genus *Dendrocincla* represents a primitive woodcreeper that has advanced little. This apparent link with leaf-tossers was not supported by anatomical analyses of woodcreeper-ovenbird relationships, but evidence of it has emerged recently in analyses of mitochondrial and nuclear DNA sequences. Using these molecular characters, Irestedt and col-

The woodcreepers present one of the stiffest challenges for ornithologists visiting the Neotropics. At first glance, many are confusingly similar in behaviour, shape and colour. As a result, woodcreepers are difficult to identify in the field, or even the museum, and species-level taxonomy is prone to constant revision.

The **Montane Woodcreeper**, for example, has recently been separated from the **Spot-crowned Woodcreeper** (*Lepidocolaptes affinis*). Apart from minor size and plumage differences, these two taxa are vocally distinct.

[*Lepidocolaptes lacrymiger aequatorialis*,  
Bellavista Lodge,  
Tandayapa Valley,  
Ecuador.  
Photo: Yvonne Dean]







leagues have proposed a phylogeny for the tracheophone suboscines. Their study included, among several other taxa, a single leaftosser, the Rufous-breasted Leaftosser (*Sclerurus scansor*), as well as five species of dendrocolaptids, among them the Plain-brown Woodcreeper (*Dendrocincla fuliginosa*). These authors found that the leaftosser emerged as ancestral to all woodcreepers as well as to all other ovenbirds. In spite of sampling limitations, this supports the view that both families may have evolved from a woodcreeper-ovenbird ancestor that bore some similarities to extant species of leaftosser.

On the basis of anatomical and molecular characters, there are two major lineages of woodcreepers. One of these comprises species in the four genera that were considered by Feduccia to be "intermediate" between the Dendrocolaptidae and the Furnariidae: *Dendrocincla*, *Deconychura*, *Sittasomus* and *Glyphorhynchus*. The other lineage, known as the "strong-billed" group, comprises all other dendrocolaptid species. The several characters possessed by the "intermediate" taxa that are thought to be ancestral and are shared with the ovenbirds include less stiffened shafts of the tail feathers and reduced ossification of the leg tendons in *Dendrocincla*, the presence of wingstripes in *Sittasomus* and *Glyphorhynchus*, and particular features of the skull. The "strong-billed" woodcreeper genera exhibit several derived characters, many associated with their ubiquitous creeping behaviour and trunk-foraging lifestyle, such as the "closed" two-notched sternum, a heavily ossified skull, extensive ossification of the leg tendons, and a well-developed pygostyle.

Whether the "intermediate" lineage is basal within the Dendrocolaptidae remains controversial. R. Raikow's estimate of woodcreeper phylogeny, based on characters derived from hind-limb and bill morphology, found that two monotypic genera, *Nasica* and *Drymornis*, emerged as basal to all woodcreepers; *Drymornis* was the more primitive of the two, as determined by its retention of ancestral character states, not by its specialized bill shape and ground-foraging behaviour. By contrast, two recent phylogenetic studies employing both nuclear and mitochondrial DNA sequences supported the placement of *Nasica* and *Drymornis* in the "strong-billed" assemblage. Neither study included both genera in the same analysis with other woodcreepers, one having sampled *Drymornis* and the other only *Nasica*. A possible explanation for the conclusions of the morphological study is that the wide variability in substrates used by tree-climbing birds has led to a great plasticity in anatomical characters associated with feeding and climbing, rendering characters associated with these traits less useful for phylogenetic analysis.

As noted above, woodcreepers in the genus *Dendrocincla* may be the most primitive within the family, a hypothesis reflected in most linear classifications. All six species in this apparently monophyletic genus have rectrices with a somewhat less rigid shaft and a reduced spiny tip when compared with other dendrocolaptid genera, which exhibit typically rigid shafts with prominent bare, spiny tips that are often curved ventrally. Members of this genus do not depend so much on trunk-foraging, instead catching most of their food by sallying like a flycatcher; they use vertical trunks mostly for perching, and perch on horizontal branches more often than do most woodcreepers. Within the genus *Dendrocincla*, species-level taxonomy is in need of study. Widespread species of *Dendrocincla*, such as the Plain-brown and the White-chinned Woodcreepers (*Dendrocincla merula*), have several well-differentiated subspecies, some of which may merit recognition as full species when more comprehensive reviews of geographical variation in genetic and vocal characters become available. Within the White-chinned Woodcreeper, differences in vocal characters, size and iris colour suggest that at least two species may be involved. In view of the vocal and plumage differences documented by Willis, it seems better to treat the Plain-winged Woodcreeper (*Dendrocincla turdina*) of south-eastern Brazil as being distinct from the Plain-brown Woodcreeper, with which it was formerly considered by most authors to be conspecific. Leaving aside *turdina*, the Plain-brown Woodcreeper has at least three other distinctive groups of subspecies, some of which may ultimately be found to be deserving of separate species status.

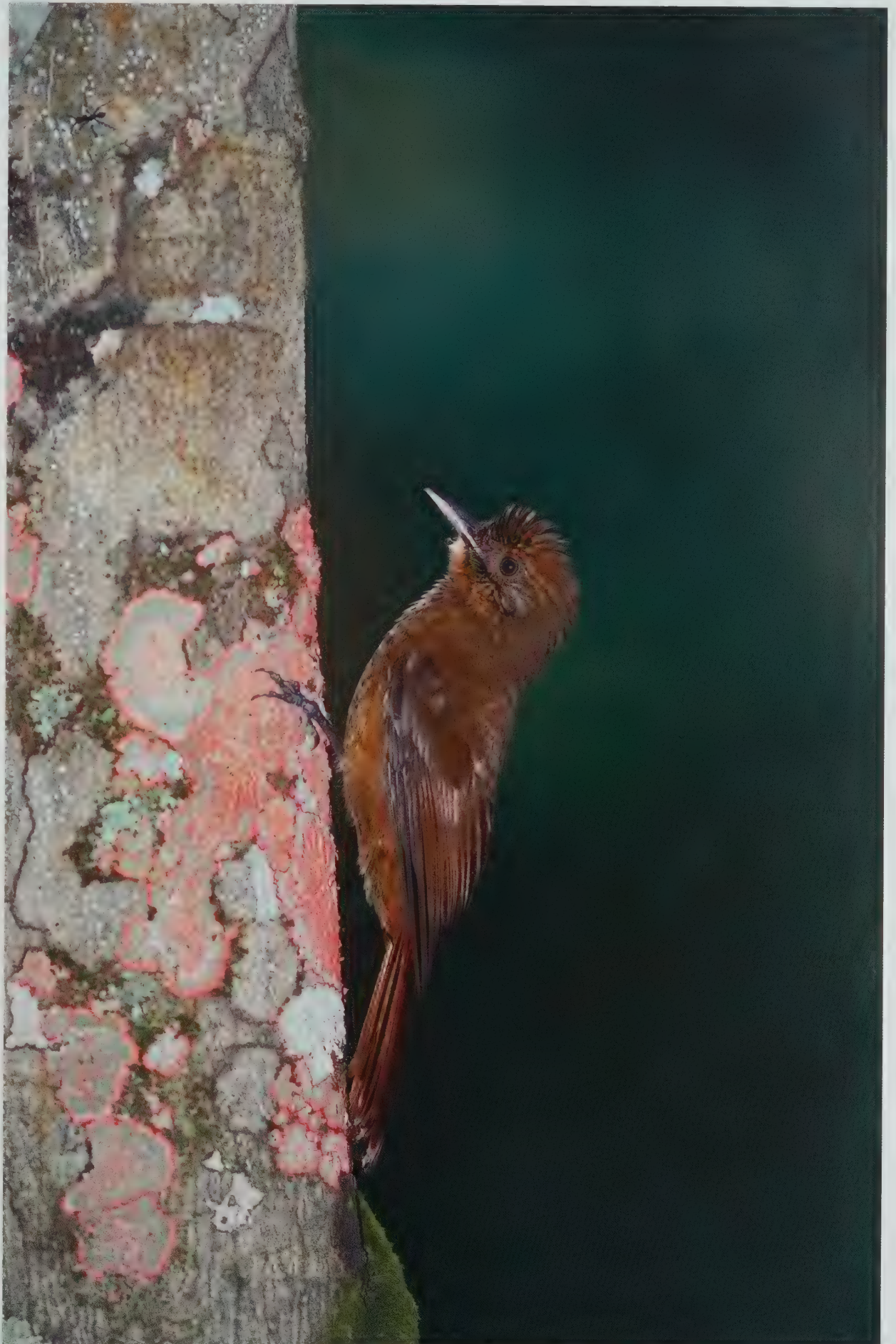
The name *Dendrocolaptes certhia* once delimited a species with a range extending from Mexico to the southernmost reaches of Amazonia. As knowledge increased, however, it became clear that there were consistent differences in morphology, foraging behaviour and voice between those populations occurring north and west of the Andes and those in Amazonia. So marked are these differences that two species are now recognized: the Amazonian Barred Woodcreeper (which retains the name *D. certhia*), and the Northern Barred Woodcreeper. The latter differs from the former by its rufous cap, blackish bill and lores, and more extensive and better-defined barring on the underparts, although separation in the field is not a problem, as the two never occur together. Had their voices been identical, these morphological differences would probably have been insufficient basis for separating them into two species. However, their voices differ dramatically, which is the most convincing evidence that the two forms would not interbreed if their ranges overlapped.

[*Dendrocolaptes sanctithomae*  
*sanctithomae*,  
Soberania National Park,  
Panama.  
Photo: Marie Read]



For centuries, avian classification has been based largely on morphology. Much as this method succeeded in providing a map of diversity for the world's birds, it achieved too rough a sketch of the Dendrocolaptidae. In this family, morphological differentiation between allied taxa is slight, their true relationships only discernible by a thorough analysis of vocalizations and genetics. Because such studies are in their infancy, the emerging patterns of variation are often perplexing, and many taxonomic problems remain unsolved. The **Plain-winged Woodcreeper**, for example, was long considered a race of the Plain-brown Woodcreeper (*Dendrocincla fuliginosa*), but its song differs in pace and pitch to such a degree that the two forms are now usually treated as *allospecies*. They belong in the genus *Dendrocincla*, an apparently monophyletic group of six species that are possibly the most primitive in the family. They have rectrices with a somewhat less rigid shaft and a reduced spiny tip, which may be related to the fact that they tend to depend less on trunk-foraging than most woodcreepers, instead catching most of their food by sallying.

[*Dendrocincla turdina*,  
Itatiaia National Park,  
Rio de Janeiro, Brazil.  
Photo: Edson Endrigo]





Willis also noted that the plumage and behaviour of the two *Deconychura* species suggest that the genus is intermediate between *Dendrocincla* and *Glyphorhynchus*, with the Spot-throated Woodcreeper (*Deconychura stictolaema*) being closer to the latter genus. In partial agreement with this suggestion, Raikow's phylogenetic hypothesis suggested that the two species of *Deconychura* are not each other's closest relatives, his findings placing them, along with the Olivaceous Woodcreeper (*Sittasomus griseicapillus*), in clades intermediate between *Dendrocincla* and *Glyphorhynchus*. Like the Olivaceous Woodcreeper and the Wedge-billed Woodcreeper (*Glyphorhynchus spirurus*), the two *Deconychura* species were each placed in a separate clade not closely related to any extant dendrocolaptid. Relationships among the ten taxa currently divided between the two species of *Deconychura* remain uncertain. For example, within the Long-tailed Woodcreeper (*Deconychura longicauda*), birds from Central America south to north-central Colombia, forming the "typica group" of subspecies, may be more closely related to the Spot-throated Woodcreeper. Furthermore, there is marked vocal variation within the remaining four, rather morphologically uniform, taxa of the Long-tailed Woodcreeper occurring in Amazonia.

Among the remaining "intermediate" genera, the taxonomy of the Olivaceous Woodcreeper is perhaps the one most in need of a comprehensive, systematic revision of all included taxa. The species can be divided into five major groups based on size and gross plumage coloration. This variation, combined with concordant vocal differences among some groups, is sufficiently marked to suggest that full biological species are involved, this being especially true in the case of three of the groups: each of the two groups occupying eastern Brazil, namely *reiseri* in the north-east and the "sylvellus group" in eastern and south-eastern Brazil, and the disjunct form *aequatorialis* on the Pacific coast of South America. Of the remaining subspecies of the Olivaceous Woodcreeper, some that appear similar to each other have distinct vocalizations, but it is uncertain how this variation should be interpreted. Lastly, the small yet distinctive Wedge-billed Woodcreeper is known to possess at least two geographically distinct song types, although gene flow exists between some morphologically distinct subspecies.

In contrast to the uncertain relationships among the "intermediate" woodcreepers, monophyly of the "strong-billed" clade, exclusive of *Nasica* and *Drymornis* (see above), has been corroborated by a number of investigations. A study of mitochondrial DNA (mtDNA) sequences supported the division of the "strong-billed" woodcreepers into two clades, one containing the genera *Nasica*, *Dendrozetetes*, *Hylexetastes*, *Xiphocolaptes* and *Dendrocolaptes*, and the other consisting of *Campylorhamphus*, *Lepidocolaptes* and *Xiphorhynchus*.

Molecular and anatomical characters strongly indicate a sister relationship between the genera *Hylexetastes* and *Xiphocolaptes*. *Hylexetastes* contains only two species, both confined to the Amazon Basin, whereas the four species of *Xiphocolaptes* are distributed in a variety of forested habitats from Mexico south to central Argentina. Species-level taxonomy within these genera merits further study. In the genus *Hylexetastes*, two species, the Red-billed Woodcreeper (*Hylexetastes perrotii*) and the Barbellied Woodcreeper (*Hylexetastes stresemanni*), have traditionally been recognized, although some authors have elevated the subspecies *uniformis* of the former to a full species, the "Uniform Woodcreeper". In 1995, the taxon *brigidai* was, on the basis of plumage, described as a new species, "Brigida's Woodcreeper", but its appearance is close enough to that of *uniformis* that hybrids would be difficult to detect. Vocal similarity among these and other *Hylexetastes* taxa, coupled with limited morphometric differences, supports treatment of all as subspecies of the Red-billed Woodcreeper. Plumage patterns in *Hylexetastes* are comparable to those in the sympatric populations of the Amazonian Barred Woodcreeper (*Dendrocolaptes certhia*), which appear to constitute a single species.

The four *Xiphocolaptes* have significantly longer bills than do the two *Hylexetastes*, but they are otherwise nearly identical structurally. This morphological similarity is reflected in their placement as sister taxa in a recent phylogeny. Unlike species in the genus *Hylexetastes*, those in the genus *Xiphocolaptes* differ

notably in plumage patterns, less so in size. All members of the genus share similar structure, however, in that they are large and heavy-bodied, with the tail relatively short, and the bill long, massive and laterally compressed. *Xiphocolaptes* formed a monophyletic clade in a phylogenetic analysis that sampled three of the four species. Three species are largely restricted to discrete biogeographical regions, within which geographical variation is subtle. The White-throated Woodcreeper has three subspecies in the Atlantic and Planalto forests of eastern and south-eastern Brazil and adjacent portions of Argentina and Paraguay. The Great Rufous Woodcreeper (*Xiphocolaptes major*), a Chaco species, has four subspecies in Bolivia, south-western Brazil, Paraguay and northern Argentina. The rare Moustached Woodcreeper (*Xiphocolaptes falcirostris*) is distributed spottily in deciduous forests of the Caatinga region of north-eastern Brazil. Unlike its three congeners, the Strong-billed Woodcreeper (*Xiphocolaptes promeropirhynchus*) occurs over a vast range and exhibits tremendous geographical variation in plumage and habitat preference. There are currently 25 recognized subspecies, divided into three groups: the "emigrans group" in Central America, the "promeropirhynchus group" living in the Andes of northern South America, and the "orenocensis group" of the Amazonian lowlands and the foothills of the tepuis. C. Cory and C. Hellmayr hypothesized that the "orenocensis group" is a separate species, the "Great-billed Woodcreeper", and others have raised the possibility that all three groups may represent distinct species. Some taxa in this genus have had a tortuous taxonomic history. Recent analysis of plumage characters revealed that the taxon *franciscanus*, formerly regarded either as a separate species, "Snethlage's Woodcreeper", or as a subspecies of the White-throated Woodcreeper, is instead best treated as the southernmost population of the globally threatened Moustached Woodcreeper. Conversely, a poorly known race of the White-throated Woodcreeper, *villanovae* from north-eastern Brazil, was formerly considered a subspecies of the Moustached Woodcreeper.

The genus *Dendrocolaptes* likewise forms a discrete morphological group, but its affinities to other woodcreepers remain uncertain. Some analyses suggest a close relationship between *Dendrocolaptes* and *Hylexetastes*, but more recent analyses of anatomical characters favour a sister relationship with *Xiphocolaptes* and *Hylexetastes* combined. Analyses of molecular data suggest that *Dendrocolaptes* occupies a basal position relative to the genera *Dendrozetetes* and *Nasica*. Species limits within and between currently recognized species in this genus also remain unsettled. The two barred woodcreepers, which together have populations extending from southern Mexico southwards to the southernmost reaches of Amazonia, were formerly united in a single species, *Dendrocolaptes certhia*, but differences in morphology and voice between populations occurring north and west of the Andes and those in Amazonia are sufficiently marked that two species are now recognized: the Northern Barred Woodcreeper (*Dendrocolaptes sanctithomae*) and the Amazonian Barred Woodcreeper, respectively. By contrast, variation in morphology and voice suggests that the form *concolor*, previously regarded as a separate species under the name "Concolor Woodcreeper", is best treated as a subspecies of the Amazonian Barred Woodcreeper. Species limits within what apparently constitutes a superspecies of streaked birds, the Black-banded (*Dendrocolaptes picumnus*), Planalto (*Dendrocolaptes platyrostris*) and Hoffmann's Woodcreepers (*Dendrocolaptes hoffmannsi*), are uncertain. Morphologically, the little-known Hoffmann's Woodcreeper is unique within the genus, having a longer, slimmer bill and unusual plumage patterns. Although Raikow grouped Hoffmann's with the two barred woodcreepers, its voice, foraging behaviour and biogeography support Willis's assertion that it is more closely related to the Black-banded and Planalto Woodcreepers.

Taxonomic confusion in the Dendrocolaptidae is perhaps best exemplified by the largest genus in the family, *Xiphorhynchus*. This genus has a broad distribution, and its 15 members exhibit a diverse range of body sizes and ecological adaptations. A. Aleixo's recent phylogenetic hypothesis, based on variation in mtDNA, helped to clarify many relationships in this vexing genus while at the same time highlighting further challenges. De-





The statement that both of these photographs show **Olivaceous Woodcreepers**

is true according to current taxonomy, but it may not be true for much longer. Based on differences in size and coloration, at least five major groups of subspecies exist, and some of these groups may well represent full biological species.

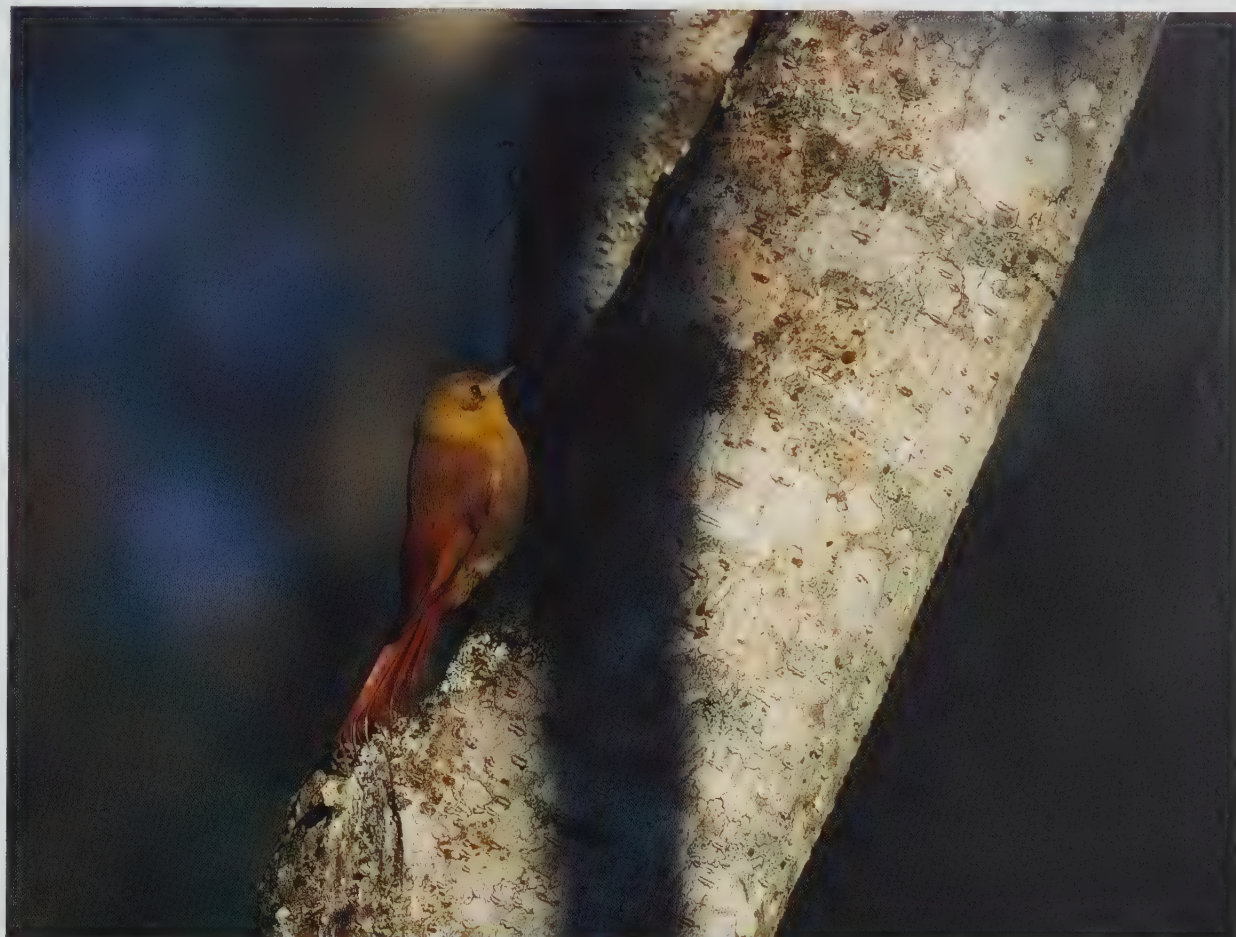
The form pictured above is a member of the "griseus group", which occurs in Central America and northern South America; the form below is a member of the "sylvellus group", which is largely confined to the Atlantic forests of eastern South America.

These photos show races from opposite extremes of the range of *Sittasomus* that are characterized by rather marked differences in both plumage coloration and vocalizations. On the other hand, birds in the "griseus group" appear relatively similar to populations in Amazonia and the Chaco ("griseicapillus group"), but these two groups differ dramatically in vocalizations.

Nevertheless, the traditional treatment should not be altered until the relationships of all groups are adequately understood.

[Above: *Sittasomus griseicapillus gracileus*, Tikal, Guatemala.  
Photo: Michael Gore/FLPA.

Below: *Sittasomus griseicapillus sylvellus*, Iguazú, Argentina.  
Photo: Julián M. Alonso]





spite the morphological diversity in the genus, molecular evidence implies that, with the exception of the Straight-billed Woodcreeper (*Xiphorhynchus picus*) and Zimmer's Woodcreeper (*Xiphorhynchus kienerii*), all species of *Xiphorhynchus* share a common ancestor. These results further combine with patterns of gross morphology and aspects of ecology to support the treatment of most species in one of four groups, but the affinities of two additional species remain unclear. The first group comprises an Amazonian radiation of small dendrocolaptids that characteristically follow mixed-species flocks through the understorey. The second group consists of four ecological generalists occurring from Mexico south to southern Amazonia and eastwards to the Atlantic Forest of Brazil; these species are larger than those in the first group, are less tied to the forest understorey, and forage alone or by following either mixed-species flocks or army ants. The third group contains two largely montane species, the Spotted Woodcreeper (*Xiphorhynchus erythropygius*) and the Olive-backed Woodcreeper (*Xiphorhynchus triangularis*), each of medium size and atypical plumage, that may be foraging specialists on mossy trunks.

The Straight-billed and Zimmer's Woodcreepers, representing the fourth group, are sibling species that are sufficiently distinct from other *Xiphorhynchus* to have been treated for many years in the genus *Dendroplex*. The recent genetic analysis suggested that these two are more closely related to the genera *Campylorhamphus* and *Lepidocolaptes*. Notwithstanding this, the return of the Straight-billed and Zimmer's Woodcreepers to their own genus is not straightforward, because an unfortunate nomenclatural problem complicates the use of the name *Dendroplex*. Moreover, the bill of Zimmer's Woodcreeper does not fit the diagnosis for *Dendroplex*, and this species was consequently placed in *Xiphorhynchus* even by authors who still classified the Straight-billed Woodcreeper in *Dendroplex*. Further complicating matters, a recent examination revealed that the holotype of *Dendroornis* [= *Xiphorhynchus*] *kienerii*, described in 1856 and subsequently considered a subspecies of the Straight-billed Woodcreeper, matches *Dendroplex* [= *Xiphorhynchus*] *necopinus*, described in 1934 and known as Zimmer's Woodcreeper. *Dendroplex necopinus* is, therefore, a junior synonym of *Dendroornis kienerii*, and the current scientific name of Zimmer's Woodcreeper becomes *Xiphorhynchus kienerii*. Until these various problems are resolved, it is deemed best to retain the Straight-billed and Zimmer's Woodcreepers in *Xiphorhynchus*.

Affinities of two other species in this genus are uncertain. The Lesser Woodcreeper (*Xiphorhynchus fuscus*), occurring in the Atlantic and Planalto forests of eastern Brazil and adjacent areas in Paraguay and Argentina, was for many years classified in the genus *Lepidocolaptes*. In 1983, Willis suggested that, because of its behaviour, it belonged in *Xiphorhynchus*; more recent analyses of anatomical and molecular characters place its closest relatives as members of the Amazonian radiation that combines the *X. ocellatus* and *X. spixii* species complexes. The Striped Woodcreeper (*Xiphorhynchus obsoletus*) is similar morphologically to species in the radiation of small Amazonian woodcreepers, but genetic analyses have not resolved its affinities.

Hypothesized relationships within each of the four groups of *Xiphorhynchus* woodcreepers are in a state of flux. Although mtDNA data supported the monophyly of the Amazonian radiation in the first group, consisting of the *X. ocellatus* and *X. spixii* superspecies groups, the basal taxon is the Lesser Woodcreeper of the Atlantic Forest. Within this radiation, mtDNA data supported a return to the treatment of the *X. ocellatus* superspecies group as comprising three species: the Chestnut-rumped (*Xiphorhynchus pardalotus*), Ocellated (*Xiphorhynchus ocellatus*) and Tschudi's Woodcreepers (*Xiphorhynchus chunchotambo*). The molecular data likewise supported the results of an independent analysis of plumage by J. Haffer, which indicated that the *X. spixii/elegans* species complex should be recognized as two species, the monotypic Spix's Woodcreeper (*Xiphorhynchus spixii*) of eastern Amazonia and the polytypic Elegant Woodcreeper (*Xiphorhynchus elegans*) of southern and western Amazonia. The latter now includes not only the nominate race and *ornatus*, traditionally recognized within *X. elegans*, but also

racings *juruanus*, *insignis* and *buenavistae*, all of which have traditionally been placed within *X. spixii*.

Even more complicated are the taxonomic issues associated with the second group of widespread generalists, and especially the complex now combining the Buff-throated Woodcreeper (*Xiphorhynchus guttatus*) and the Cocoa Woodcreeper (*Xiphorhynchus susurrans*). The taxa contained in this complex have been treated variously as constituting either one widespread species or as many as three or four different species. The currently recognized division is unsatisfactory and requires further study. Within the Cocoa Woodcreeper, for example, geographical patterns of song types are more complex than was previously realized, and differences in size do not appear to correspond to current species limits. Taxa within the "*susurrans* group", occurring in Trinidad, Tobago and the adjacent Venezuelan mainland and offshore islands, are significantly larger than those within the "*nanus* group" ("Lawrence's Woodcreeper"), which range west from central Venezuela into Central America. Moreover, plumage patterns of the former group are so different that authors who merged taxa in the "*nanus* group" with the remaining South American populations of the Buff-throated Wood-



The recent tendency has been to split species, but the taxonomic status of many woodcreepers still remains to be clarified. For example, based on morphological differences the taxon *eytoni*, currently treated as a race of the

**Buff-throated Woodcreeper**, has been considered a species in its own right, the "Dusky-billed Woodcreeper". Nevertheless, a variety of data, including molecular analysis, support its merger with the western Amazonian populations of the Buff-throated. Although this is the treatment adopted here, there remain such striking mismatches in genetics, plumage and vocalizations in the expanded Buff-throated Woodcreeper complex that it is likely to include more than one allospecies.

[*Xiphorhynchus guttatus* *eytoni*, Imperatriz, Maranhão, Brazil.  
Photo: Haroldo Palo]



Many woodcreeper species have had a convoluted nomenclatural history, and none perhaps more so than **Zimmer's Woodcreeper**.

Long known by the name *Dendroplex* [= *Xiphorhynchus*] *necopinus*, a taxon described in 1934, it went so long without being conclusively identified in the field that its status was questioned. When its validity was proven, museum studies revealed the holotype of *Dendroornis* [= *Xiphorhynchus*] *kienerii* to be the same bird; after its description in 1856, this specimen, and the name, had been mistakenly assigned to the Straight-billed Woodcreeper (*X. picus*). As the first use of *kienerii* thus predates that of *necopinus*, the latter is rendered redundant as a junior synonym.

[*Xiphorhynchus kienerii*,  
Anavilhanas Islands,  
Amazonas, Brazil.  
Photo: Arthur Grosset]



creeper still recognized the Cocoa Woodcreeper proper as being distinct. Molecular analyses suggest that members of the “*nanus* group” are closely related to races of the Buff-throated Woodcreeper occurring in eastern Brazil and in the north-eastern part of Amazonia, these being, respectively, the nominate race and the subspecies *polystictus* and *connectens*. Because members of the “*susurrans* group” were not examined in this study, however, relationships between it and the “*nanus* group” remain uncertain.

Taxonomy is in a state of flux even within the Buff-throated Woodcreeper as presently recognized. Molecular data support the merger of the form *eytoni*, the “Dusky-billed Woodcreeper”, with the western Amazonian populations of the Buff-throated Woodcreeper, a move complemented by variation in plumage coloration but contradicted by marked differences in both bill coloration and vocalizations. These data also indicate a close relationship between the nominate race of the Buff-throated Woodcreeper, from coastal eastern Brazil, and the disjunct forms *polystictus* and *connectens* occurring north of the River Amazon in Brazil, the Guianas and the Orinoco region of southern Venezuela, all to the exclusion of geographically intermediate populations in Amazonia (both the *eytoni* and *guttatoides* subspecies groups). Vocally, the nominate form is relatively similar to populations previously recognized as the Dusky-billed Woodcreeper, with *polystictus* and *connectens* similar but of uncertain affinities. Songs of the western Amazonian forms, by contrast, differ strikingly. It is likely, therefore, that the complex of taxa now recognized as the Buff-throated Woodcreeper includes more than one allospecies, but interpretation of variation in voice, morphology and DNA in this widespread dendrocolaptid is in need of more comprehensive sampling.

The other two species in this group of generalists, the Ivory-billed Woodcreeper (*Xiphorhynchus flavigaster*) and the Black-striped Woodcreeper (*Xiphorhynchus lachrymosus*), both occur largely or exclusively in Central America. Molecular data suggest that they are each other's closest relatives; together, they are the sister to the Buff-throated Woodcreeper complex.

The genus *Lepidocolaptes* is a well-defined group of relatively small woodcreepers, all of which have a slender and

decurved bill. With the Lesser Woodcreeper now placed in *Xiphorhynchus*, as mentioned above, anatomical and molecular data indicate that *Lepidocolaptes* is monophyletic. Although many earlier authors considered South American populations of the Montane Woodcreeper (*Lepidocolaptes lacrymiger*) to be conspecific with the Spot-crowned Woodcreeper (*Lepidocolaptes affinis*), these two taxa differ in voice and plumage. In eastern Brazil, the Scaled (*Lepidocolaptes squamatus*) and Scalloped Woodcreepers (*Lepidocolaptes falcinellus*) are now regarded as separate species. They were formerly combined as northern and southern populations, respectively, of a single species, but they exhibit diagnosable differences in plumage, without showing intergradation where the taxa meet abruptly in south-eastern Brazil. Two of the most widespread species, the Lineated Woodcreeper (*Lepidocolaptes albolineatus*) and the Narrow-billed Woodcreeper, display substantial geographical variation in plumage, and each has many described subspecies. On the basis of plumage differences, Hellmayr hypothesized that populations of the Lineated Woodcreeper from southern, central and western Amazonia, the “*fuscicapillus* group”, represent a distinct species, referred to as the “Dusky-capped Woodcreeper”. The songs of the Lineated Woodcreeper also show marked geographical variation. The remaining two species in this genus are the White-striped Woodcreeper (*Lepidocolaptes leucogaster*), a Mexican endemic, and the Streak-headed Woodcreeper (*Lepidocolaptes souleyetii*), which is widespread in Central America and northern South America. In these two, geographical variation in plumage is far more subtle, and the latter, despite its broad distribution, exhibits little geographical variation in vocalizations.

Genetics and anatomical features support monophyly of the final genus of the Dendrocolaptidae, *Campylorhamphus*. On the basis of mtDNA sequences, the five scythebills are most closely related to the genus *Lepidocolaptes*. Nevertheless, the Greater Scythebill (*Campylorhamphus pucherani*) not only is the sole member of its genus that has not yet been included in any systematic study, but it is also the most divergent, both morphologically and vocally. As seems to be the rule among woodcreepers, both of the widespread species, the Red-billed (*Campylorhamphus*



*trochilirostris*) and the Curve-billed Scythebills (*Campylorhamphus procurvoides*), exhibit marked geographical variation in plumage, song and habitat preference; each may comprise multiple allospecies. Moreover, habitat preferences and vocalizations imply that some Amazonian populations of the Curve-billed Scythebill may be better treated instead as subspecies of the morphologically similar Red-billed.

Because the plumage of woodcreepers is cryptically patterned, and because their anatomy is constrained by foraging behaviour, morphological diagnosis of many species is difficult. There are few avian groups for which the careful analysis of genetic and vocal data is more likely to improve our understanding of systematics and evolution. Future studies must strive to document variation not among a select sample of named taxa but, instead, among populations separated by either vast distances or key barriers to dispersal. Only by using sampling schemes sufficiently thorough to document genetic and vocal variation within populations, and to determine, with a fair degree of certainty, the geographical barriers that correspond to these differences, can one make taxonomic recommendations confidently. As voice is an indirect measure of reproductive isolation, the analysis of vocal data requires a caution similar to, if not greater than, that demanded in the interpretation of genetic data. Before making taxonomic recommendations based on any type of variation, it is necessary to outline geographical patterns in the characters, to develop a benchmark of variation within populations for later comparison among populations, and to determine, with a reasonable degree of certainty, that the characters being studied are, indeed, important in the process of reproductive isolation. It is essential to bear in mind that, although both genetic and vocal data may be important for understanding species limits, these data are subject to the same pitfalls as are morphological data, our understanding of which has had a century longer to develop.



## Morphological Aspects

Although woodcreepers are variable in body size, with a total length ranging from 13 cm to 36 cm, most members of the family share a rather uniform body form and plumage coloration. Bill length and shape account for much of the variation. The bill represents more than a quarter of the body length in the Long-billed Woodcreeper (*Nasica longirostris*), for example, and in the scythebills its extreme curvature results in the distinctive placement of the eyes. The smallest dendrocolaptid is the widespread Wedge-billed Woodcreeper, which, at 13 cm long and weighing 15 g, is not much larger than a *Certhia* treecreeper (Certhiidae). The heaviest is the Strong-billed Woodcreeper, up to 169 g in weight and to 35 cm in length, which is a little larger than a *Colaptes* flicker (Picidae). The majority of woodcreepers are roughly the size of a small thrasher (Mimidae).

Males tend to be larger than females, but broad overlap in both measurements and body mass typifies most dendrocolaptid species. Pronounced sexual dimorphism in size is exhibited only by the Long-tailed and Spot-throated Woodcreepers, the males of which are considerably larger and heavier than the females. Differences in plumage among woodcreepers are slight, both between young birds and adults and between the sexes. In a few species, especially some *Dendrocolaptes*, males are recognizable because they raise their crown feathers frequently, producing a somewhat shaggy crest that creates a noticeably different appearance from that of the sleek-headed females. Sexual dimorphism in plumage is otherwise not apparent.

Juveniles differ subtly from adults, but young birds already resemble adults after their first body moult. Immatures tend to be more barred, have a slightly shorter tail, and have a darker or blacker bill that is significantly shorter than the adult's; the last feature is evident for a relatively longer time than are other characteristics of immaturity.

Woodcreeper plumage does not undergo seasonal change. The only perceivable changes in the feathering are the result of wear and fading, some birds appearing paler late in the breeding season, when many feathers, most notably the remiges and rectrices, are extensively worn.

The predominant coloration of most dendrocolaptids is brown, with the wings and tail contrastingly rufescent. Even such species as the Olivaceous, Olive-backed, Spotted and Black-striped Woodcreepers, which are mostly grey, olive or blackish, exhibit the plain, reddish-brown wings and tail typical of the family. As an overlay on their more subdued coloration, woodcreepers may possess a variegated pattern of streaks, spots and bars on the back, nape, head and underparts. Exceptions to this include the Olivaceous Woodcreeper and most members of the genus *Dendrocincla*, which are largely unmarked. Most species have creamy, whitish or light brown streaks and tear-shaped spots, but the Olive-backed and Spotted Woodcreepers are unique in sharing triangular spots on the back and chest. Barring is usually restricted to the belly, and even then is obvious only on species of *Dendrocolaptes*, *Hylexetastes* and *Xiphocolaptes*. The degree of barring reaches its extreme in the Northern and Amazonian Barred Woodcreepers, each being extensively barred above and below. A feature present only on the Olivaceous and Wedge-billed Woodcreepers is a conspicuous wingbar running obliquely across all but the outer remiges. As this bar is formed by pale spots on the inner webs of the remiges, it is seen most easily from below on the spread wing, a vantage seldom attainable with living woodcreepers in the field; the wingbar is mostly concealed when the wings are folded.

Some adaptations designed to resist feather wear or degradation in moist environments seem apparent in the plumage. On many woodcreepers, the tips of the remiges, especially those of the outermost primaries that are exposed on the folded wing, are much darker, containing more melanin than is present in the rest of those feathers. There is a slight tendency towards darker coloration in birds occupying regions of higher relative humidity, in accordance with Gloger's rule, but the pattern is subtle, as has been discussed for some *Dendrocolaptes* woodcreepers. Species that occupy open habitats may be dramatically countershaded, dark above and light below, in comparison with those that favour

The scansorial lifestyle of woodcreepers has led to a suite of unique adaptations, most obvious of which are strong feet that bear sharp, hook-like claws for gripping bark, and the lengthened, toughened and curved spines of the tail feathers, which function as a prop. This prop is so important that if woodcreepers lose their tails they have great difficulty climbing. Both these features can be seen in this **Spot-throated Woodcreeper**, one of two species in the genus *Deconychura*. Both have slender bodies and fine straight bills and are reclusive inhabitants of humid forest, but, despite their apparent similarity, it is possible that they occupy separate clades intermediate between *Dendrocincla* and *Glyphorhynchus*.

[*Deconychura stictolaema clarior*, Posé, French Guiana. Photo: David Massemin/Bios]





The **Wedge-billed Woodcreeper** is one of the most widespread species in the family, being a familiar species from Mexico to eastern Brazil. Little larger than a treecreeper (Certhiidae), it is the smallest woodcreeper, and the only one with an obviously upturned bill, a feature typical of gleaners. Although it has the highly developed tail spines characteristic of woodcreepers, it retains one feature thought to be ancestral: a wingstripe on the base of the remiges reminiscent of many species of ovenbird (Furnariidae).

[*Glyphorhynchus spirurus subrufescens*,  
River Anchicaya,  
near Buenaventura,  
Colombia.  
Photo: Cyril Laubscher]

the forest interior. The Narrow-billed Woodcreeper, for instance, occurs in open country and has predominantly white underparts. Other examples of dendrocolaptids with relatively pale plumage are the Scimitar-billed Woodcreeper, the Moustached Woodcreeper, and some subspecies of the Red-billed Scythebill that inhabit predominantly open or semi-open landscapes.

Limited data, for a few species, suggest that woodcreepers undergo a single, annual moult that lasts from four to six months. The wings and the tail are typically moulted simultaneously, although wing moult may start first. As with most bird species, the remiges are replaced in sequence from the innermost primary outwards and from the outermost secondary inwards; the rectrices are moulted outwards from the innermost pair. Moult usually follows immediately after the breeding season, but for at least a few dendrocolaptids, such as the Northern Barred and Streak-headed Woodcreepers, moult and breeding may overlap. The Amazonian Barred Woodcreeper's cycle of breeding and moult is believed to extend over a period of nine to ten months, while a female Streak-headed Woodcreeper possessing a brood patch was in the early stages of moult. It is thus possible that some species begin the moult process before their young leave the nest. Overlap of moult and breeding may be an adaptation either for a long moult cycle to be completed before mating and singing resume in the next breeding season or, alternatively, to allow the completion of both during a flush of prey abundance.

The most distinctive aspects of woodcreeper morphology are manifest in their adaptations for tree-climbing, or "hitching". To some extent, these adaptations are shared with other tree-climbing birds, such as the woodpeckers, a few genera of ovenbirds (e.g. *Margarornis* and *Pygarrhichas*) and treecreepers (Certhiidae), but with important differences and modifications. All woodcreepers are able to hitch up vertical trunks by flexing their legs and hopping forwards; the long and spiky tail holds them in place when they stop. Rigid shafts of the tail feathers facilitate these tail-braced movements and postures. Among all tree-climbing birds, strengthening of the tail shafts appears to be best developed in woodcreepers, which tend to have proportionately longer rectrices. Unlike other birds that use the tail as a brace, however, the woodcreepers' denuded, spiny rectrix tips are curved downwards like claws, allowing them to contact the substrate at a right angle. The stiffened rectrices with rigid, spiny tips enable the tail to support most of the bird's weight. Woodcreepers that have lost the tail have great difficulty in climbing.

Several characteristics of the foot and leg are adapted for climbing trees. Woodcreepers have an anisodactyl foot, with three toes pointing forwards and one toe backwards, an arrangement typical of all passerines. Their feet differ from those of most passerines, however, in having the outer and middle toes united for much of their length, and of similar lengths, both being much longer than the inner toe. The hallux is reduced. The claws of the





Within this relatively unspectacular family, the **Long-billed Woodcreeper** is perhaps the most striking species. It is a strange and charismatic creature that occurs in riverine habitats, swamps and flooded forests throughout much of Amazonia. Its bill, which accounts for more than a quarter of its total length, is used for probing into bromeliads and other epiphytes. The species is also notable for its loud and distinctive song, a series of mournful whistles, easily imitated by humans. Even poor imitations usually elicit a response: territorial individuals approach aggressively, growling excitedly and peering about in search of their imagined competitor.

[*Nasica longirostris*, Esmeralda, Amazonas, Venezuela.  
Photo: Bruno Walther]

three front toes are strongly curved, aiding in clinging, whereas the claw of the hallux is long and often pressed hard against the substrate, providing support. Strong thighs dominated by strengthened flexor muscles, which have developed at the expense of extensor muscles, provide the power for climbing up trunks. Extensive ossification of the leg tendons appears to be an adaptation for resisting stress on the toes and ankle flexors while clinging to trees. Ossification of the tendons in the legs is reduced, or is more individually variable, only in those woodcreepers that do not rely exclusively on tree-climbing for foraging; these include the Tawny-winged Woodcreeper (*Dendrocincla anabatina*) and, probably, other species in the genus *Dendrocincla*. Elaborate tree-climbing adaptations allow dendrocolaptids to exploit several ecological niches, but they also greatly restrict a woodcreeper's ability to use other modes of locomotion or the wide variety of perches available to most passerines.

Most woodcreepers are exclusively arboreal, moving between trees with a strong, slightly undulating flight. As may be expected for birds that often fly only short distances and glide frequently, dendrocolaptids have broad wings with rounded tips. Many species, especially those that forage in association with army-ant swarms (see Food and Feeding), often approach or briefly land on the ground. Members of the genus *Xiphocolaptes* seem to spend more time on the ground than do the majority of woodcreepers, with the Great Rufous Woodcreeper being the most terrestrial. Only the Scimitar-billed Woodcreeper, with its relatively short tail and unusual hind-limb musculature, seems suited to a terrestrial lifestyle. This species runs on the ground with little difficulty.

The bill is by far the most adaptively variable feature of dendrocolaptid morphology. Its size and shape are closely correlated with foraging behaviour and have evolved around four major themes: gleaner; flycatcher; probing; and chiseller. The Wedge-billed Woodcreeper is the only member of the family that has the bill of a typical gleaner. The Olivaceous and Spot-throated Woodcreepers glean with a short, pointed bill, but they also sally after prey flushed from trunks, so the bill is somewhat broadened at the base. The Long-tailed Woodcreeper and species in the genera *Dendrocincla* and *Dendrocolaptes* have a relatively short and straight, flycatcher-like bill, characterized by a weak hook at the

tip of the maxilla. That of *Dendrocolaptes*, in particular, recalls the bill of tyrant-flycatchers (Tyrannidae), being relatively short, broad-based, flattened dorsoventrally, and hooked at the tip. These species frequently sally out for prey on the ground, trunks or foliage, or in the air, catching large arthropods and even small vertebrates (see Food and Feeding). Bills used for probing are the most variable in length and shape, being narrower and more delicate compared with other types; in addition, they tend to be compressed laterally, instead of dorsoventrally. In the case of some species, the bill is extraordinarily long and either straight, like that of the Long-billed Woodcreeper, or extremely decurved, like those of the scythebills. Dendrocolaptids possessing a probing bill explore a variety of cavities in tree and fern trunks, dead-leaf clusters, bamboo stems and epiphytes. Willis noted that species with a straight bill tend to probe from a lateral position, whereas those with a decurved bill probe from a vertical position. Many species with a probing bill also glean insects from bark or occasionally sally out after flushed prey.

Bills used for chiselling, seen on members of the genera *Hylexetastes* and *Xiphocolaptes*, are a variation of those used for probing. Such bills are laterally compressed and relatively deep and heavy. Species having this type of bill capture large prey on trunks, or tear apart decaying material accumulated on branch forks and in epiphytes. The bill of *Hylexetastes* is similar to that of *Xiphocolaptes*, but is shorter. The two *Hylexetastes* woodcreepers are more generalist foragers, at times sallying out for prey in the manner of many woodcreepers that have a flycatcher-like bill.

## Habitat

Woodcreepers inhabit chiefly forest or woodland, from tropical rainforest in the lowlands to stunted cloudforest near the timberline, but a few species occur in savanna or other semi-open habitats. Most species are restricted to tropical evergreen forest, but some are plentiful in semi-deciduous woodland and gallery forest in drier regions. A small number occur in pine-oak (*Pinus-Quercus*) woodland and pine forest in the mountains of Central America, and others frequent montane evergreen forest or





So many morphological characters of the **Scimitar-billed Woodcreeper** are presumed to be ancestral that some taxonomists consider this species basal to all woodcreepers.

Not only is its syrinx structure unique, but it is also one of very few woodcreepers not infested by feather mites of the genus *Platyacarus*. With its relatively short tail and unusual hind-limb musculature, it also seems to be the only member of the family suited to a terrestrial lifestyle. Indeed, while it is often found in trees, it regularly drops to the ground and runs with little difficulty. It occurs in the Chaco region of eastern Bolivia, western Paraguay and northern Argentina, where it frequents arid scrub, dry forests and savanna. In common with several other species of woodcreeper that live in drier or more open habitats; its plumage is relatively pale and countershaded. This is presumably due to a combination of bleaching, camouflage and the need to strengthen plumage with melanin in more humid environments.

[*Drymornis bridgesii*,  
El Palmar National Park,  
Argentina.

Photo: Günter Ziesler]





cloudforest in the Andes and other mountain ranges. The *Polylepis* woodlands of the high Andes and the temperate forests of southern South America are perhaps the only forested habitats in the Neotropics that are devoid of woodcreepers. As a result of their sedentary nature and their aversion to crossing large unforested gaps, few dendrocolaptid species inhabit offshore islands.

Most woodcreepers are found in lowland forest, but a few species occupy higher elevations. The vast majority of this family's members are restricted to tropical lowlands from sea-level to elevations mostly below 1000 m, with some species occurring sparingly to 1500 m. Above this elevation, the Tyrannine (*Dendrocincla tyrannina*), Olive-backed and Montane Woodcreepers and the Greater Scythebill are among the few species that are largely confined to Andean cloudforest, mostly at elevations ranging from 1500 m up to 3000 m but, depending on the species, locally down to 700 m or up to 3400 m. In the mountains of Central America, the White-striped and Spot-crowned Woodcreepers likewise frequent cloudforest, pine-oak woodland and pine-fir (*Pinus-Abies*) forest, ascending locally to 3600 m. Most lowland and montane dendrocolaptids occur exclusively within their preferred elevations, but a few widely distributed species occur from lowland rainforest up to montane cloudforest. The Strong-billed and Black-banded Woodcreepers are the best examples of this pattern, with some populations of each having strictly montane distributions and others being restricted to the Amazonian lowlands.

The rainforests of the Amazonian lowlands are without doubt the centre of woodcreeper distribution, with many localities harbouring in excess of 15 species and some supporting more than a third of all woodcreeper species. Maximum diversity is reached at sites where upland (*terra firme*) forest and seasonally flooded (*várzea* and *igapó*) forests exist in close proximity. Most woodcreepers occur in the upland forest, but a few, such as the Long-billed, Striped and Zimmer's Woodcreepers, are largely restricted to seasonally flooded and river-edge forests. Within each of these habitats, woodcreepers are often segregated by micro-

habitat, often through the use of different strata or unique substrates. The scythebills' specialization on bamboo thickets is a striking example: at some Amazonian sites, both the Red-billed and the Curve-billed Scythebills are to a great extent confined to dense stands of bamboo, mostly *Guadua*.

Different species of woodcreeper join different types of foraging flocks. Some associate primarily with mixed-species flocks that travel rapidly through the forest, while others join aggregations of birds that forage in association with swarming army ants. Species in the genera *Xiphorhynchus* and *Lepidocolaptes* often forage with mixed flocks in which most species frequent trunks and branches in the understorey and mid-levels of the forest, but a few, such as the Lineated Woodcreeper, instead seek food in the forest canopy. By contrast, woodcreepers that forage in association with army-ant swarms, examples of which include the White-chinned, Black-banded and Red-billed Woodcreepers, often perch on trunks within a few metres of the ground while awaiting prey, which they capture on or near the ground. Differences among the members of the family in the use of habitat are discussed in greater detail below (see Food and Feeding).

Away from Amazonia, the number of dendrocolaptid species co-existing at a given site drops significantly. In the Atlantic Forest of south-eastern Brazil, for example, no more than eight species are found in sympatry. Likewise, whereas 15-19 woodcreeper species co-exist at many Amazonian sites, only nine have been recorded at the well-worked La Selva Biological Station, in the lowlands of Costa Rica; indeed, only 19 species occur in all of Central America. Regional diversity may be higher where elevational gradients are pronounced because some woodcreeper species show a pattern of altitudinal replacement, but at a local level species diversity decreases rapidly at higher elevations.

Most woodcreepers are relatively specialized in their micro-habitat use, with the majority frequenting the understorey and mid-levels of the forest interior. A significant percentage are more flexible in that they regularly frequent forest edge or enter older second growth when it regains the character of mature forest. Far fewer dendrocolaptids inhabit younger second growth, planta-



**The Strong-billed Woodcreeper** is the most widespread and morphologically variable member of the genus *Xiphocolaptes*.

Throughout its vast range, 25 subspecies are currently recognized. All four members of this genus have bulky bodies, relatively short tails, and long, massive, laterally compressed bills. In terms of morphology, they seem to form a sister-group to *Hylexetastes*, members of which tend to have plainer plumage, stubbier bills and different vocalizations. Members of *Xiphocolaptes* occur from Mexico south to the Chaco region of Bolivia, Paraguay and Argentina, and occupy a broad spectrum of wooded habitats, including humid cloudforest, lowland rainforest, and the semi-arid woodlands.

[*Xiphocolaptes promeropirhynchus emigrans*, Chan Chich, Belize. Photo: Joe Fuhrman]

The genus *Dendrocolaptes* forms a discrete group of woodcreepers apparently allied to *Xiphocolaptes* and *Hylexetastes*.

The members of this genus tend to have large bodies and wide-based bills that are less bulky than those of their nearest relatives. The ventral plumage is usually strongly barred and the throat is often pale, features that are clearly seen on this **Planalto Woodcreeper**. This species occurs in the Atlantic forests of east and south Brazil, east Paraguay and north-east Argentina, where it replaces its sister-species, the Black-banded Woodcreeper (*D. picumnus*) of Amazonia.

[*Dendrocolaptes platyrostris platyrostris*, Itatiaia National Park, Rio de Janeiro, Brazil. Photo: Edson Endrigo]



tions, selectively logged forest or isolated forest fragments, and, in most cases, these are the very species that live in more open habitats.

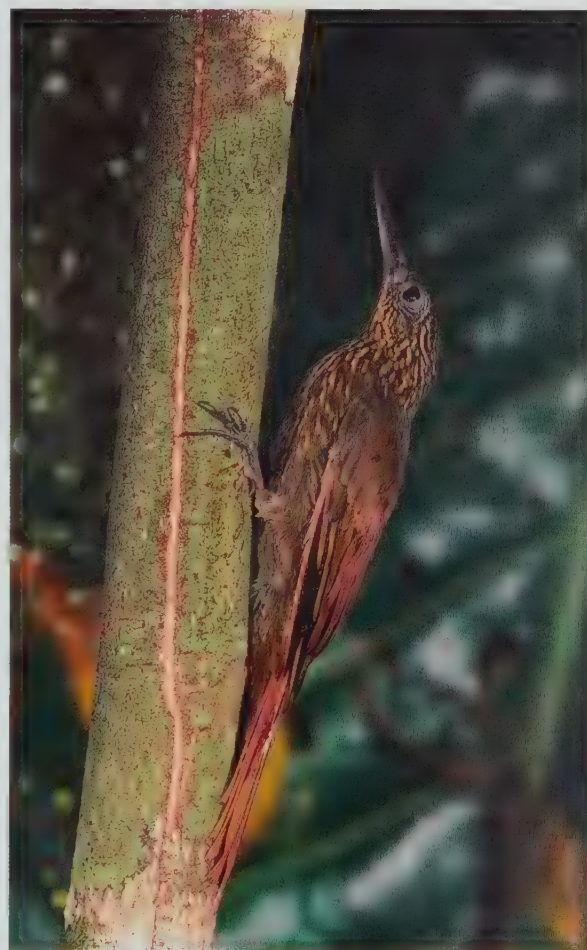
In addition to the four species characteristic of semi-open habitats (see below), there are a few woodcreepers that, despite requiring at least patches of mature forest nearby, seem to be able to exploit a variety of forest types. Near the northern limit of the family's distribution, the Ivory-billed Woodcreeper occurs in a variety of lowland, montane, deciduous, pine-oak and secondary forests, from sea-level to about 2500 m. Willis even speculated that this species' behavioural plasticity may give it an advantage over more specialized woodcreepers in the variable climate typical of northern latitudes. It may be a similar plasticity that has allowed the Olivaceous Woodcreeper to become the most widespread member of the family, with a range extending from near the northern edge of woodcreeper distribution, in western Mexico, to near the southern limit, in northern Argentina, and also from sea-level to nearly 2300 m. The Olivaceous Woodcreeper occurs in lowland rainforest in Amazonia and along the Atlantic coast of Brazil, in deciduous woodland on the Yucatán Peninsula and in the *caatinga* of north-eastern Brazil, and in montane forest in Central America, the Andes, the coastal ranges of Venezuela and the various ranges of the Brazilian Atlantic Forest. It is also one of few dendrocolaptids that is present on the offshore island of Tobago, although, surprisingly, it is absent from Trinidad.

Only a few woodcreepers occupy predominantly non-forested habitats. The Narrow-billed Woodcreeper is widespread in both savanna (*cerrado*) and Chaco vegetation in central South America, and, more locally, elsewhere on the continent. It also occurs in gallery and dry forests and can even be found in gardens and city parks. Even more plastic in its habitat preferences is the Straight-billed Woodcreeper. This species is largely restricted to coastal mangroves in some parts of its range, but elsewhere it frequents arid scrub, wooded savanna, gallery forest, or seasonally flooded forest. It is equally at home near humans, frequenting plantations, scattered trees associated with agricultural lands, and even clumps of trees in and around some Amazonian cities. The only wooded situation that it avoids is the interior of mature forest. The Streak-headed Woodcreeper fills a similar niche in Central America. It shows a comparable variety of habitat preferences, and appears to be equally comfortable in the proximity of humans. The Scimitar-billed Woodcreeper occurs in arid scrub, savanna, and the Chaco woodlands of southern South America.

Finally, there are four dendrocolaptids that can be found in semi-open woodland. The Great Rufous and Moustached Woodcreepers, in addition to some populations of the Olivaceous Woodcreeper and the Red-billed Scythebill, occur primarily in semi-deciduous and deciduous woodlands, habitats that may be transformed seasonally into semi-open environments.

### General Habits

Woodcreepers are among the most characteristic avian inhabitants of Neotropical lowland forests. Their conspicuous habit of creeping, or "hitching", up trees gives the group its name. This behaviour converges with that of the generally smaller but morphologically similar treecreepers of the families Certhiidae and Climacteridae, which together occupy much of the rest of the world. In each group, the birds climb up tree trunks and branches by grasping the bark with their strong feet and long claws, and using the spine-tipped tail as a prop. Woodcreepers move with short hops, those of some species being so rapid that motion appears smooth. Although they occasionally back down trunks, especially when descending into nesting or roosting cavities, or when foraging in association with ant swarms, they typically move upwards and outwards, using a direct or spiral route. Trunk-foraging woodcreepers begin near the bottom of their preferred stratum, creep to the top of this level, and then fly to the base of the next tree to repeat the process. Most species prefer vertical trunks, but others select horizontal limbs in the canopy, and a few seem to specialize in creeping along the undersides of branches. Only a few species, particularly those frequenting open situations, regu-



larly descend to forage on the ground (see Food and Feeding). The flight of most large woodcreepers is strong but somewhat undulating, with rapid flaps interspersed with glides on outstretched wings and spread tail. Smaller species have a more direct and darting flight.

Woodcreepers are generally encountered singly or in pairs, but many species join the mixed-species flocks that are ubiquitous in the lowland forests they frequent. Woodcreepers usually attend flocks of insectivores, rather than those of tanagers (Thraupidae) and other frugivores. Most species associate with understory flocks containing *Myrmotherula* antwrens and, especially, *Thamnomanes* antshrikes. A few species, most notably the Lineated Woodcreeper, associate with canopy flocks led by greenlets (*Hylophilus*) or other canopy-dwelling insectivores. Groups of woodcreepers consisting of more than a single pair are uncommon in most species, and in most instances these groups represent families, with one or both parents tending dependent young. In the case of *Dendrocincla*, only one parent raises the young (see Breeding), so that groups of multiple individuals probably represent either a mother and her offspring or aggregations of wandering immatures. By contrast, the larger woodcreepers of the genera *Dendrocolaptes*, *Hylexetastes* and, presumably, *Xiphocolaptes* remain paired throughout the year, and the young of some species may not become independent until the beginning of the year after hatching; thus, when two individuals of a species are seen together, they usually represent members of a pair, and small groups are likely to be family parties.

The aggregations of woodcreepers that gather, sometimes in fairly large numbers, over swarms of army ants are anomalous for these typically solitary birds. Ant swarms are often attended by three or fewer Plain-brown Woodcreepers, although it is not unusual for four or five individuals to be present together, and in Trinidad, in the absence of competing thamnophilid antbirds, up to twelve individuals of this species have been found at the same swarm. Similarly, seven or eight White-chinned Woodcreepers have been noted at ant swarms in south-eastern Peru.

*Taxonomic confusion is notable in the Dendrocolaptidae, a situation best exemplified by Xiphorhynchus. This, the largest genus in the family, covers a broad geographical distribution, as well as a diverse range of body sizes and ecological adaptations. One superspecies group is centred around the Ocellated Woodcreeper (X. ocellatus). Although this group is often considered to consist of two species, the Ocellated and Chestnut-rumped Woodcreepers, recently published mtDNA data support treatment involving three separate species, with the recognition of Tschudi's Woodcreeper (X. chunchotambo).*

[*Xiphorhynchus pardalotus*, Guyana.

Photo: Doug Wechsler/VIREO]





The genus *Lepidocolaptes* is a well-defined group of woodcreepers, all of which are relatively small, with a slender decurved bill and a propensity to follow mixed-species flocks. As it follows these flocks, the **Spot-crowned Woodcreeper** hitches up trunks, checking for insect prey amongst the mosses and lichens of its cloudforest home. As this photograph reveals, the legs of woodcreepers are usually splayed outward, in a posture reminiscent of woodpeckers (*Picidae*). It would appear that this orientation of the legs, in conjunction with the stabilizing prop of the tail, allows for more efficient gripping and climbing. The photograph shows another recurrent theme: in many woodcreepers, especially those of humid environments, the tips of the flight-feathers are contrastingly dark. This is the result of high densities of melanin, a compound that strengthens feathers and protects them against excessive wear. The distribution of melanin in the remiges of woodcreepers is likely to be an adaptation to counter feather damage.

[*Lepidocolaptes affinis neglectus*,  
Chirripo National Park,  
Costa Rica.  
Photo: Kevin Schafer]



The taxonomic sequence of woodcreepers terminates with the *Campylorhamphus* scythebills, an assemblage of five species easily differentiated from most other members of the family by virtue of their amazingly long and downcurved bills. The scythebills use this most distinctive feature to probe inside clusters of vegetation, moss and bromeliads, in search of invertebrate prey. The **Black-billed Scythebill** is the only member of the genus that occurs in the Atlantic Forests of south-eastern Brazil.

[*Campylorhamphus* falcularius, Itatiaia National Park, Rio de Janeiro, Brazil. Photo: Edson Endrigo]



Although not particularly secretive, many woodcreepers are nonetheless shy. Most move rapidly and continuously, making them difficult to observe. Only rarely do trunk-foraging woodcreepers remain motionless for more than a few seconds. By contrast, those that forage over ant swarms are more sedate, primarily because they must wait to spot prey flushed by the ants. Accordingly, a disproportionate amount of what is known of the behaviour of woodcreepers pertains to birds foraging in association with ants. At the first sign of danger, woodcreepers hide on the rear surface of large trunks while tentatively peering around to investigate the situation. Many are difficult to approach and to study at close quarters, but some become accustomed to the presence of an observer, especially during extended periods of observation while they forage over army ants.

Roosting behaviour has been studied for only a few dendrocolaptids, in Costa Rica by A. F. Skutch, and in eastern Amazonia by Y. Oniki. Woodcreepers roost solitarily, in cavities similar to the ones used for nesting (see Breeding). Natural cavities are used more often than are old woodpecker holes, possibly because they are less conspicuous. The young do not return to the natal nest after fledging, but instead they seek new sites for roosting. Although documented roost-sites have been in cavities relatively close to the ground, this may reflect ease of observation as much as it does availability of suitable cavities or particular preferences. A captive Straight-billed Woodcreeper roosted in an upright position, with its head tucked into its back feathers. This posture is probably the typical one adopted by roosting woodcreepers.

Maintenance behaviour among the members of this family is poorly known, with most information being only anecdotal. Various woodcreepers scratch the head by the indirect method, reaching over a wing with one foot while gripping the substrate with the other. In addition, many dendrocolaptids have been observed to perform "anting" behaviour, in which they rub small, presumably noxious items on the wing or tail feathers; sometimes, the items are then eaten. Anting behaviour is often thought to be a means of removing ectoparasites of the plumage or skin, but Willis

suggested that it might serve to wipe distasteful secretions from prey, and H. Sick pointed out that formic acid released during anting might be a physiological stimulant.

Regardless of the true function of anting, and despite a dearth of knowledge of the natural history of the Dendrocolaptidae, woodcreeper parasites are fairly well studied. G. Bennett and colleagues have studied blood parasites in many woodcreeper species. Likewise, R. Price and D. Clayton reviewed an array of feather lice, chiefly of the genus *Rallicola*, that are known from woodcreeper hosts. Moreover, L. Kudon described a new genus of feather mites, *Platyacarus*, that is specific to woodcreepers, and detailed host-parasite relationships for many new species in this genus. Within the family, the absence of *Platyacarus* mites on the Scimitar-billed Woodcreeper provides support for the ancestral position of the genus *Drymornis*, for these mites infest at least some members of almost all other dendrocolaptid genera. Finally, M. Marini and D. Couto correlated ecological parameters and ectoparasite infestation for several woodcreepers from central Brazil.

Some woodcreepers are remarkably aggressive towards conspecifics and even towards other woodcreepers. During his studies of ant-followers, Willis documented numerous instances of both intraspecific and interspecific aggression among dendrocolaptids, while N. Pierpont studied interspecific interactions in a guild of woodcreepers occurring in Peru. Not surprisingly, both found that larger species are generally dominant, but some highly aggressive *Xiphorhynchus* species periodically attack the larger, less agile and possibly somewhat more docile species in the genus *Dendrocolaptes*. The Buff-throated, Black-striped and Tschudi's Woodcreepers seem to be especially aggressive. Pierpont speculated that the aggressive nature of Tschudi's Woodcreeper may be necessary for it to defend territories against the larger Elegant Woodcreeper, which generally dominates it, even forcing it into marginal habitats.

Most woodcreepers are highly territorial, but "territorial" defence is not necessarily of the same kind as that demonstrated by passerines of temperate regions. For example, among species





Woodcreepers, almost by definition, are fundamentally arboreal. As a corollary of their association with trees, they are virtually confined to forest or woodland, just about wherever these habitats occur in Central and South America. Although some forms are adapted to semi-arid or montane habitats, woodcreepers reach their highest diversity in the extensive lowland rainforests of Amazonia. Here, species such as the **Wedge-billed Woodcreeper** thrive, and various localities hold more than a third of all woodcreeper species.

[*Glyphorhynchus spirurus castelnaudii*,  
Pantiacolla Lodge,  
Manu National Park, Peru.  
Photo: Bernard van Elegem]

of understory-dwelling *Xiphorhynchus* studied by Pierpont in south-eastern Peru, territorial defence manifests itself in the eviction of intruders from understory flocks. In the case of the Elegant Woodcreeper, the dominant species in this guild, pairs excluded intruders from two understory flocks, but they allowed intrusion into the area, not only by other *Xiphorhynchus*, but also by conspecifics, provided that these intruders did not attempt to join their flocks. Thus, aggression and "territory" defence are largely limited to the immediate proximity of these flocks. One can only speculate why many woodcreepers sing only briefly, at dawn and dusk, from favoured perches near their nests or roost-sites. Song does appear to be seasonal for at least some species, their dawn bouts of singing being longer during the breeding season but quite brief at other times. Perhaps the availability of cavities used for roosting and, especially, for nesting is a limiting factor, much as are foraging opportunities in mixed-species flocks. If so, woodcreepers may concentrate their energy on defence of niche parameters that are most limiting. Future investigation of this atypical singing behaviour should provide an insight into the importance of territoriality in the family Dendrocolaptidae.

## Voice

Most woodcreeper songs are neither complex nor musical, but they are among the most characteristic components of dawn and dusk choruses in Neotropical forests. Woodcreeper songs are primarily simple rattles or trills, those of a few species comprising clear whistles. Some species emit rapid and repetitive renditions of a single note. Others have songs that take on the character of a whinny or a laugh by initially ascending and then descending, before slowing at the end. The song of the Long-billed Woodcreeper is atypical, being a simple series of three to five drawn-out whistles each described as "whoooOOOooo", "twooooooóoo" or "wheeeeéer". Only a few dendrocolaptids regularly utter more complex vocalizations, with the song of the Brown-billed Scythebill (*Campylorhamphus pusillus*) perhaps representing the pinnacle of complexity in the vocal capacities of the family: a soft, twittering trill in the background is combined with a series of loud, quavering whistles in the foreground,

yielding a song described as "wheéwhipwhipwhipawéé, at-t-t-t-weeawééawéé" or "twe-weo-WEO-weo-weo-we-we-we-we". The Scimitar-billed Woodcreeper is likewise atypical for a woodcreeper, because the loud, descending jumbles of notes that represent its song are often given in a duet.

The frequency range of woodcreeper songs is neither particularly high nor particularly low. M. Palacios and P. Tubaro documented the range as being 840 Hz to 8830 Hz for the songs of all but a few species, and they found an inverse correlation between song frequency and both body mass and bill length, the latter even after removing the effects of body size. Therefore, songs with lower frequencies are given not only by the larger species, but also by those with the longest bills. These authors suggested that, in addition to the well-known trend for larger birds to have deeper-voiced songs, the increased length of the vocal tract corresponding with a longer bill may result in resonating properties that affect song frequency. The correlation was complicated, however, by a tendency for species living in open habitats, such as wooded savanna, to have higher-frequency songs than those occupying forested habitats. The correlation of bill length and song frequency was therefore significant only when two open-country species, the Narrow-billed and Scimitar-billed Woodcreepers, were excluded from analyses.

Woodcreepers stand out among Neotropical birds for their tendency to sing during twilight hours. Apart from a few crepuscular species noted for singing in the pre-dawn darkness, such as forest-falcons (*Micrastur*) and potoos (*Nyctibius*), woodcreepers are among the first birds to sing at dawn and the last to sing at dusk. Many dendrocolaptids begin singing at the first hint of light in the sky, and their dawn chorus is over even before sunlight hits the forest canopy. Several members of the family, particularly those in the genera *Dendrocincla*, *Dendrexetastes*, *Hylexetastes*, *Xiphocolaptes* and *Dendrocolaptes*, and many *Xiphorhynchus* species, sing for no more than a few minutes in the near-darkness of pre-dawn, after which they begin their daily foraging. Many woodcreepers seldom sing during the day, so forging an association between voice and visual characters is extremely difficult, making the field identification of many woodcreepers a challenge. Most species that sing through the day do so intermittently, and, in many cases, those species that



sing during the daytime do not sing extensively at dawn. Regardless of time of day, the Olivaceous Woodcreeper typically sings intermittently, and, despite a lack of quantitative data, it seems hardly more likely to sing at dawn than to sing after sunrise. Unlike many others in the family, the Olivaceous Woodcreeper rarely delivers more than one or two songs at a time or from the same perch. Instead, this woodcreeper forages actively and sings rarely, so singing individuals are often difficult to follow. Some *Lepidocolaptes* and several of the smaller *Xiphorhynchus* species likewise sing intermittently during the day, but generally not for extended periods at dawn or dusk.

Willis found that some woodcreepers sing at dawn and dusk from perches near the centre of their territory, often near a roost-site. In these instances, song may function as a means of marking a bird's nesting or roosting territory, and, in the absence of other birds invading this territory, little singing is necessary. Territorial interactions are often accompanied by song, but Pierpont found that various species of *Xiphorhynchus* evicted intruders from mixed-species flocks, rather than from a territory itself (see General Habits). In such cases, constant singing of the kind used by birds defending a patch of suitable habitat may be unnecessary.

Despite the fact that their songs are given largely at dawn and dusk, woodcreepers are not necessarily quiet during the day, because most utter a variety of calls. The better-known species, such as the Buff-throated Woodcreeper and the closely related Cocoa Woodcreeper, regularly utter three or four different calls, and occasionally several others. Pair-members of the Buff-throated Woodcreeper are regularly encountered while foraging together, often among mixed-species flocks. Although these birds rarely sing during the daytime, mates appear to communicate with each other by using characteristic "long calls" that are given intermittently throughout the day, in all months of the year. It is possible that reports of singing by both sexes of some woodcreepers, including the Buff-throated, in fact involve individuals emitting long calls rather than true songs, which appear

to be given only by the males, and primarily during the breeding season. The most common call of the Buff-throated Woodcreeper is a descending series of five to seven loud, sometimes paired, whistles and has been described as "wheer, wheer, whip-whip-wip-wip" or "fee-a-wip, fee-a-wip, wip-wip". This species also utters, in a variety of contexts, especially when going to roost, a piercing whistle or "short call" described as sounding like "pyeeeu" or "stool".

Homologues of both the long call and the short call are given not only by other *Xiphorhynchus* species, but also by the Plain-brown Woodcreeper of the genus *Dendrocincla*. The diverse repertoire of the Plain-brown Woodcreeper includes both a short, descending trill, which many authors consider to be the song, and a long, incessant sputtering that may last for several minutes at a time, which many regard as a call. The true function of these vocalizations remains unclear, but the conditions under which the sputtering "trill" is given, generally at dawn, suggest that it represents the song of the species. By contrast, the short trill is given throughout the day, and apparently by immatures and adults of both sexes.

Considering its infrequent nature, the role of song in maintaining pair-bonds is uncertain. Most woodcreepers appear to be monogamous, and many remain paired throughout the year, but this is not true of all species. All members of the genus *Dendrocincla* for which data are available appear to form only brief pair-bonds, but the degree to which this is true of other woodcreeper species is unclear (see Breeding). The Tyrannine Woodcreeper has a remarkably loud song that it delivers for several hours daily through the breeding season, usually from the same perches on exposed ridges. Although apparently territorial when singing, males do not react to tape playback outside their normal hours of singing. On the basis of these findings, from a study in the Colombian Andes, Willis and Oniki suggested that these birds may mate on "exploded", or dispersed, leks that have come about as a result of the difficulty of finding mates in the sparsely populated and densely vegetated environment frequented

The fact that one species of woodcreeper is able to co-exist with several others is achieved through resource partitioning.

The **White-throated Woodcreeper**, for example, is usually seen foraging in the lower strata of forest (often 5-8 m up), where it favours thick, mossy trunks averaging over 75 cm in diameter. This species shares the Atlantic Forest with several other woodcreepers, most of which prefer to forage on slimmer trunks, or at greater heights above the ground. These differences in foraging technique, or foraging substrate, help to minimize the direct competition between species for resources.

[*Xiphocolaptes albicollis*  
albicollis,  
Itatiaia National Park,  
Rio de Janeiro, Brazil.  
Photo: Edson Endrigo]







The **Buff-throated Woodcreeper** is amongst the commonest birds in a variety of forested habitats across the lowlands of Amazonia. With the use of vision alone, an ornithologist working in the region is likely to see this species once every day or two. If the same ornithologist is familiar with its voice, however, it will be heard dozens of times during the same period. The degree of this disparity relates to a variety of phenomena, not least the difficulty of seeing wildlife in the rainforest. Aural cues are particularly important in such a complex environment, and the Buff-throated Woodcreeper assists by periodically emitting loud vocalizations throughout the day. The reason for the abundance of this species in Amazonia is perhaps related to its generalist foraging strategy and aggressive nature. It climbs trunks of various different sizes, as seen here, and at various different levels above the ground, from human head height up into the canopy. It gleans on bare trunks, but more commonly it probes or rummages amongst clusters of dead leaves or, less often, vines or epiphytes.

[Above: *Xiphorhynchus guttatus guttatoides*, Explorama Lodge, Quebrada Sucusari, Peru. Photo: Jordi Bas.



Below: *Xiphorhynchus guttatus guttatoides*, Mamirauá Reserve, Amazonas, Brazil. Photo: Luiz Claudio Marigo]



Members of the genus *Dendrocincla* are amongst the woodcreepers least inclined to forage by climbing trees. They live in humid forests from Mexico to Argentina. The **Ruddy Woodcreeper** is one of several species in the genus that are regularly, or indeed almost always, found in association with army ants, swarms of which they follow through the understorey, perching on low trunks and sallying after flushed prey. On occasion, they may even perch on a horizontal branch or alight briefly on the ground.

[*Dendrocincla homochroa*  
*homochroa*,  
Tikal, Guatemala.  
Photo: Michael Gore]



by the species (see Breeding). Continuous singing over a protracted period is also typical of the Cocoa Woodcreeper, another dendrocolaptid that is believed not to form extended pair-bonds. This scant evidence suggests that the frequency with which songs are given and the importance of the song in mate attraction are inversely proportional to the duration of the pair-bond.

Woodcreeper songs contradict the long-standing belief that suboscine songs are highly stereotyped and geographically invariable. Recent work has documented a higher degree of individual variation in woodcreeper song than had ever been suspected. Moreover, in addition to the variations on a theme resulting from individual and micro-geographical differences, the songs of geographically distant populations of what are now recognized as the same species may show remarkable differences, or variations on different themes.

Indeed, marked geographical variation appears to be the rule, rather than the exception, not only in the songs of many woodcreepers but also in those of many other Neotropical suboscines. The significance of this variation, however, remains elusive. Many populations that differ vocally also differ, albeit often subtly, in morphology. In a few instances, research has revealed that some vocal differences among populations correspond to the existence of cryptic species, but the extent of geographical variation in suboscine vocalizations is still unknown. Moreover, although a few North American tyrant-flycatchers have innate songs, subsequent studies on bellbirds (*Procnias*) imply that some suboscine songs are learnt. Furthermore, it seems reasonable to believe that even innate vocalizations should vary geographically, because there is no reason why they should differ fundamentally in this respect from other genetically controlled characters such as aspects of plumage or other morphological characters. Interestingly, this does seem to be the case with the very few suboscines in which it has been investigated. Recent studies have revealed that the songs of certain tyrant-flycatchers of the genus *Empidonax*, as well as those of the furnariid Pale-breasted Spinetail (*Synallaxis albenscens*), do exhibit a limited amount of geographical variation.

Geographical variation is marked and easily perceptible in the songs of the Plain-brown, Long-tailed, Olivaceous, Wedge-billed, Northern Barred, Planalto, Ocellated, Buff-throated, Co-

coa, Straight-billed and Lineated Woodcreepers, and in those of both the Curve-billed and the Red-billed Scythebills. The songs of many other dendrocolaptid species vary more subtly. Exceptions seem to be the Cinnamon-throated Woodcreeper (*Dendrexetastes rufigula*) and members of the genera *Hylexetastes* and *Xiphocolaptes*, the songs of which vary minimally over large regions, despite significant variation in plumage. Even interspecific differences are subtle in the last two genera.

Marked geographical variation in the songs of what was until recently recognized as a single species, the "Barred Woodcreeper", provided the first clue that *Dendrocolaptes certhia*, as then constituted, in fact represented more than one allospecies. Three remarkably different song types are known from these birds, the differences representing not variations on a theme but, instead, completely different themes. First, Amazonian populations utter a rapid whinny or laugh, generally consisting of 8-15 simple notes that rise and then fall in pitch. Secondly, barred woodcreepers from Central America and north-western South America deliver a series of usually three to five protracted whistles with a sharply inflected ending. Finally, on the basis of a few recordings made by the late P. Schwartz, birds from the Maracaibo Basin of north-western Venezuela sing a series of protracted whistles on one pitch, followed by the notes degrading into a harsh chatter. C. Marantz and Willis have recently identified a suite of morphological and behavioural characters that correspond with these song differences, and as a result avian taxonomists now recognize two species, the Northern Barred Woodcreeper and the Amazonian Barred Woodcreeper.

Marantz is currently undertaking work aimed at characterizing geographical variation in the songs of the Buff-throated Woodcreeper and its allies, some of which may lead to the recognition of similar cryptic species. In this case, there appear to be three to five distinct song types in the Buff-throated Woodcreeper. Some populations deliver a rapid three-part whinny consisting of an introduction in which the notes increase in frequency and speed, a middle part during which frequency and speed are relatively constant, and a conclusion that descends and slows. Each part is highly variable in length, even within individual birds, and sometimes one of the parts is lacking altogether, so analysis of geographical variation is a challenging task.



The Olivaceous Woodcreeper offers an even greater challenge to scientists. Preliminary studies reveal that it has at least six different song types, which may be broadly classed into two groups: the trills sung by populations in Central America and adjacent South America; and series of clear whistles given by birds in the rest of the South American range. Although all of these populations have been recognized for more than 75 years as belonging to a single species, geographical variation in plumage and songs is so striking that it is possible that what is now recognized as a single species may instead comprise as many as five allospecies.

It seems premature to draw conclusions solely on the basis of geographical patterns in woodcreeper vocalizations. The high degree of individual variation complicates assessment of geographical differences, and the behavioural context of vocalizations is poorly understood. A tendency towards interspecific territoriality adds further confusion, and in no case is there any sound indication of which vocalizations, if any, serve as reproductive isolating mechanisms in Dendrocolaptidae. Some calls of the Buff-throated Woodcreeper vary geographically to a lesser degree than do its songs, a pattern displayed by many oscine passerines, the Song Sparrow (*Melospiza melodia*) being just one example. If these calls are used for species recognition and mate choice, then marked differences in songs may not be a good indication of evolutionary relationships; preliminary genetic data for the Buff-throated Woodcreeper support this scenario. The function of woodcreeper song, therefore, remains a mystery. The limited understanding of the evolutionary relationships within the Dendrocolaptidae, and of the behavioural context and genetic basis of their vocalizations, lends weight to the view that taxonomic changes should await analyses of multiple, independent data sets. These must encompass, in addition to vocalizations, both genetic and morphological characters, including plumage, bare parts and skeletal features.

## Food and Feeding

The name "woodcreeper" is appropriate for all but a few members of the family because most dendrocolaptids spend much of

their time creeping along the trunks and branches of trees and large shrubs. Species in the genera *Xiphorhynchus* and *Lepidocolaptes* seek their food in a manner typical of woodcreepers. With few exceptions, these species forage while creeping up trunks or outwards along major branches. They either glean prey from the bark's surface or probe into crevices, knotholes, vine tangles, moss clumps, or clusters of bromeliads or other epiphytes. There is, however, some degree of specialization with regard to substrate use. The Buff-throated Woodcreeper, for example, probes or rummages through clusters of dead leaves, whereas the Spotted Woodcreeper tends to forage on trunks heavily laden with moss. Other *Xiphorhynchus* species, and some in the genus *Xiphocolaptes*, may specialize on foraging among bromeliads and other epiphytes.

Gleaning and probing of bark, although characteristic of woodcreepers, are not the sole means of obtaining food. Pierpont distinguished two guilds of woodcreepers on the basis of their primary foraging technique, either picking or sallying. Although the species that primarily pick will occasionally sally after flushed prey, and those that sally also regularly pick prey, the two techniques provide a means of partitioning resources behaviourally rather than spatially. These behavioural differences are associated with specific genera. Species that forage principally while climbing trunks, limbs and vines, either by picking items from the surface or by probing into the wood or other substrate, include the members of the genera *Xiphocolaptes*, *Xiphorhynchus* and *Lepidocolaptes*. Woodcreepers in the genera *Glyphorhynchus*, *Nasica*, *Drymornis*, *Dendrexetastes* and *Campylorhamphus* are probably best treated as pickers with specialized types of foraging behaviour or substrates. Sallying is best suited to "sit-and-wait" predators. Among the woodcreepers, this behaviour is most often associated with attendance at swarms of army ants, which are used as "beaters" to flush prey that is easily captured. Sallying is especially well developed in the genera *Dendrocincla*, *Hylexetastes* and *Dendrocolaptes*, which include those species that depend on following ants. The members of *Sittasomus* and *Deconychura* also sally, but these birds follow mixed-species flocks, not ants. Whereas ant-followers spend much of their time perched motionless, waiting for prey to be flushed, the Olivaceous and Long-tailed Woodcreepers hitch up



Several dendrocolaptids tolerate or even prefer open, dry or degraded habitats. The **Streak-headed Woodcreeper**, for example, is most frequently encountered in open woodland, deciduous and gallery forests, wooded savanna, mangroves, xeric scrub, second growth and forest edge. It is less common in the interior of humid evergreen forest, lower montane forest, oak woodland and pine savanna. At some sites it occasionally forages on cactus stalks, and it even occurs in rural areas, where it visits gardens, orchards and scattered trees in farmland.

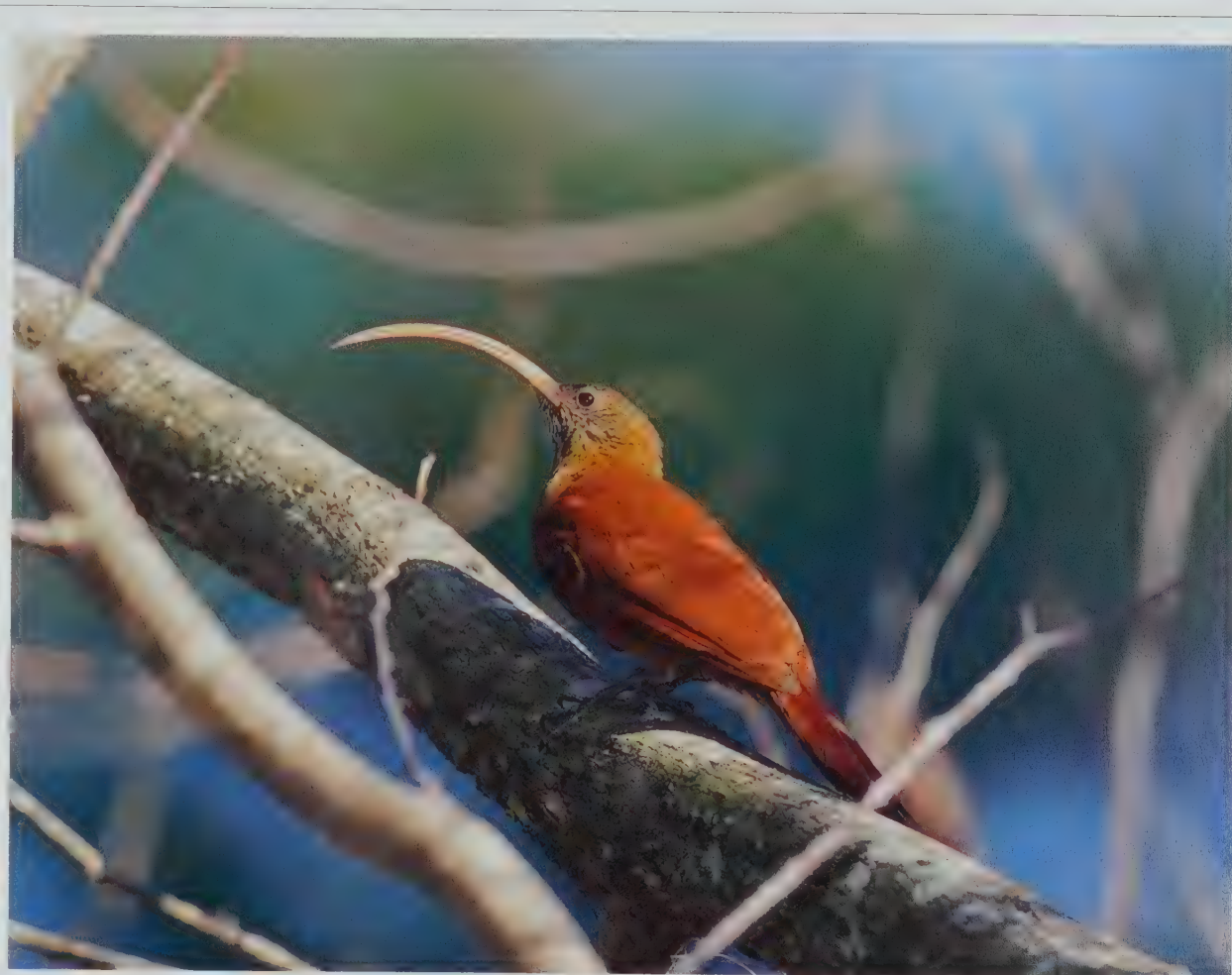
[*Lepidocolaptes souleyetii* compressus, Quintana Roo, Mexico. Photo: Patricio Robles Gil]



Another species with a clear predilection for drier or marginal habitats is the **Red-billed Scythebill**.

This species inhabits Chaco woodlands and other open, low-stature formations such as deciduous forest, gallery forest, cerrado and caatinga. It is less frequently found in humid evergreen forest, and where it does occur in this habitat it tends to be distributed primarily in marginal or early successional habitat such as seasonally flooded forest (especially várzea), Gynerium cane, and, especially, patches of bamboo.

[*Campylorhamphus trochilirostris lafresnayanus*, Aquidauana, Mato Grosso do Sul, Brazil.  
Photo: Edson Endrigo]



trunks in the typical manner, suggesting that their sallies are directed at prey flushed during the bird's ascent.

Species in both foraging guilds partition food resources by exploiting different micro-habitats and strata. Among the pickers, for example, scythebills frequent bamboo thickets, where the exceptionally long and strongly decurved bill of the genus is well suited to probing stalks in search of arthropods hidden in the hollow interior. The equally long but straight bill of the Long-billed Woodcreeper may likewise facilitate its probing of clusters of bromeliads along horizontal limbs of canopy trees. The massive but somewhat less unusual bill of species in the genera *Xiphocolaptes* and *Hylexetastes* may allow these woodcreepers to exploit resources that are inaccessible to the smaller and weaker-billed species of *Xiphorhynchus*, such as grubs inside decaying wood. Whereas most *Xiphorhynchus* species forage along trunks and large limbs in the understorey and at mid-levels of the forest interior, the Black-striped Woodcreeper forages primarily in the upper strata of the forest, sometimes making forays into the canopy. Several species of the closely related genus *Lepidocolaptes* likewise forage predominantly in the canopy, a habit especially prevalent when *Xiphorhynchus* woodcreepers also occupy the site. Pierpont suggested that the absence of interspecific aggression between the Lineated Woodcreeper, the sole *Lepidocolaptes* that is widespread in the Amazon Basin, and the various species of *Xiphorhynchus* that she studied was the result of habitat-partitioning by strata. Despite overlap with *Xiphorhynchus* species in both substrate use and size of prey taken, the Lineated Woodcreeper avoids contact with these larger birds by foraging in the canopy above them. It is possible that, where they co-exist with *Xiphorhynchus*, the smaller *Lepidocolaptes* may be pushed up into the canopy.

Similar partitioning by strata has been suggested for the two smallest dendrocolaptids. The Wedge-billed Woodcreeper forages primarily by gleaning tiny prey from the surface of large trunks in the understorey. By contrast, the Olivaceous Woodcreeper seeks food largely in the upper levels of the forest, especially at sites

where it co-exists with the Wedge-billed. The degree to which the Olivaceous Woodcreeper is forced into the canopy by the Wedge-billed Woodcreeper remains untested, but the Olivaceous Woodcreeper forages more by sallying than by picking, and the substrate preferences of these two are not nearly so similar as they are for many larger woodcreepers.

In an early study of substrate use in a community of woodcreepers in south-eastern Brazil, M. de L. Brooke demonstrated an even finer partitioning within the trunk-foraging species of the understorey. He found that species differed in the diameter of trunks that they used, in the distance for which they ascended these trunks, and in their tendencies to forage on trunks or on branches.

Despite the morphological uniformity of the woodcreepers (see Morphological Aspects), many localities harbour a variety of species. Five different pickers in the genus *Xiphorhynchus* occupied Pierpont's study site in south-eastern Peru. Some of these are segregated by habitat, but three understorey species occur syntopically, partitioning the site by means of interspecific aggression, rather than by habitat preference, diet or foraging technique. Indeed, Pierpont demonstrated that the Elegant and Tschudi's Woodcreepers both prefer *terra firme* forest and that both used the same techniques to take prey of the same size from the same substrates. In a few instances, individuals of these two species experienced reciprocal turnover of their territories, demonstrating conclusively that the same sites are suitable to both species. Although they both occurred at the same sites, Tschudi's Woodcreepers preferred mixed-species flocks that travelled through the forest at a significantly faster pace than that of flocks attended by Elegant Woodcreepers. The Striped Woodcreeper was the third species found at the site, where it was largely restricted to palm swamps; radio-tracking, however, revealed that this species repeatedly attempted to invade territories of Elegant Woodcreepers in neighbouring *terra firme* forest. Although the Striped Woodcreeper sallied to a greater extent, it likewise took prey of comparable size to that captured by the





This **Great Rufous Woodcreeper** is perching on the trunk of a tall tree in dry forest of the Chaco region. First it preens intently, and then it pauses to peer down, investigating the nature of the disturbance below. In common with other members of its genus, it possesses a stout bill designed for capturing relatively large prey. Being heavy, laterally compressed and relatively deep, this bill is functional as a preening tool, but ideal for chiselling at crevices, hammering at loose bark, and tearing decaying material from forks and epiphytes.

[*Xiphocolaptes major* major,  
Río Pilcomayo National  
Park, Formosa, Argentina.  
Photos: José & Adriana  
Calo]

Elegant and Tschudi's Woodcreepers and from similar substrates. Pierpont further demonstrated that overlap in diet and substrate use was positively correlated with interspecific territoriality and aggression, meaning that those species most likely to compete over resources were also the most likely to exclude one another by using aggression. Pierpont's work on understory *Xiphorhynchus* woodcreepers provided an important insight into the way in which closely similar species can co-exist, not only by partitioning resources and micro-habitats, but also through interspecific aggression.

A few dendrocolaptids, principally those frequenting open habitats, regularly descend to the ground. The Scimitar-billed Woodcreeper is the family's archetypical ground-forager. Unlike other woodcreepers, this species eschews foraging among mixed-species flocks of arboreal insectivores, instead looking for food on or near the ground in association with terrestrial ovenbirds. Indeed, it is adept at running on flat surfaces through the scattered vegetation of its preferred habitat, but, like other woodcreepers, the Scimitar-billed does investigate fallen logs, branches, bromeliads, and cavities in trees. Most of its prey appears to be taken from the earth's surface, typically by probing in soft soils. The Great Rufous Woodcreeper, which frequents the same open savannas and Chaco woodland as those inhabited by the previous species, also forages terrestrially on occasion. Although it does not spend so much time on the ground as does the Scimitar-billed Woodcreeper, it does descend regularly to rummage through leaf litter, especially in open habitats. When on the ground, the Great Rufous Woodcreeper usually hops rather clumsily, unlike the Scimitar-billed Woodcreeper, which runs about swiftly and seems better adapted for a terrestrial lifestyle.

Rather unexpected was an instance of an Ivory-billed Woodcreeper seen foraging on mudflats exposed when mangroves were cleared. It is possible that most woodcreepers descend to the

ground only rarely because they are awkward on horizontal surfaces, and thus highly vulnerable to predators.

The majority of accumulated knowledge of the foraging behaviour of woodcreepers is based on detailed observations made by Willis and Oniki of birds foraging over ant swarms. Although these authors' findings may be biased slightly with regard to those woodcreepers that do not normally follow ants, the basic foraging dichotomy appears to be stereotyped. Even over ant swarms, sallying species dart after flushed prey, whereas picking species, which forage over ants opportunistically, take prey primarily by gleaning or probing as they hitch up trunks low over the swarm. Woodcreepers that normally forage at mid-levels may descend to levels near the ground to consume flushed prey. By all accounts, the White-chinned Woodcreeper is an obligate ant-follower. The Red-billed, Black-banded, Hoffmann's, Amazonian Barred, Plain-brown, Plain-winged, Tawny-winged and Ruddy Woodcreepers (*Dendrocicla homochroa*) also follow army ants, but none of them exclusively so. The true ant-followers share a similar mode of foraging: they descend to vertical perches near the ground and await flushed prey. When a prey item is spotted, the woodcreeper sallies out to capture it, whether it is on the ground, on a nearby trunk, amid foliage, or in mid-air. Much like picking woodcreepers, ant-followers use interspecific aggression as a means of partitioning foraging opportunities over swarming ants. Larger species, especially the Red-billed and Black-banded Woodcreepers, take the premier positions, low down over the front edge of the swarm. At army-ant swarms in Amazonian Brazil, Willis noted that near Manaus, in the absence of competing antbirds (*Rhegmatorhina*) and bare-eyes (*Phlegopsis*), the relatively small White-chinned Woodcreeper forages on slim trunks near the ground, but near Belém, where large antbirds are present at swarms, it forages higher up and from broader trunks. Willis reported similar exclusion and release for the Plain-brown



In common with most birds, woodcreepers will occasionally bask in sunlight when the opportunity presents itself, as it has to this **Planalto Woodcreeper**. However, seeking food is the favourite pastime of woodcreepers, and because of this they are usually on the move. When foraging, they tend to climb upwards or outwards along trunks or branches, using a direct or spiral route. Much more rarely they move downwards in reverse, especially when entering nesting or roosting cavities, or when foraging in association with ant swarms. In general they move with short hops, sometimes so rapidly that their ascent seems smooth rather than jerky.

Trunk-foraging woodcreepers generally begin near the base of trees. When they reach the top, they convey themselves rapidly on their rounded wings by means of swooping or undulating flight, interspersed with short glides, to the base of the next tree, where the process is repeated.

[*Dendrocolaptes platyrostris intermedius*,  
Aquidauana,  
Mato Grosso do Sul,  
Brazil.

Photo: Edson Endrigo]







Little is known about the roosting behaviour of woodcreepers, presumably because they usually spend the night tucked away in the same kind of cavities in which they nest. Most roosts have been found close to the ground, although this probably relates more to the greater ease with which such sites are checked by humans than to any behavioural bias in woodcreepers. Existing reports suggest that natural cavities are used more often than are old woodpecker holes, possibly because they are less conspicuous. Roosting woodcreepers tend to orientate themselves in an upright position, with the belly against the tree, the body feathers fluffed out, and the bill tucked into the mantle plumage. Some small species may roost in shallow nooks or recesses in rotten wood, rather than in deep holes, as this

**Wedge-billed**

**Woodcreeper** attests.

It is not clear whether larger woodcreepers also use the same type of sites, but this seems less likely. It does seem that woodcreepers are faithful to the same roosting sites for prolonged periods:

this Wedge-billed Woodcreeper slept in this position night after night for several months.

[*Glyphorynchus spirurus pectoralis*,  
La Selva, Costa Rica.  
Photo: Marco Saborio]



Woodcreeper. In Trinidad, with its dearth of ant-followers, the Plain-brown Woodcreeper forages near the ground and in large aggregations, habits that are rare where this species shares swarms with aggressive antbirds and larger woodcreepers. Unlike the White-chinned Woodcreeper, the Plain-brown Woodcreeper restricts its ant-following to swarms that move through its territory, and it often picks prey items near the periphery of the swarm instead of sallying for prey near the centre.

Willis and others have speculated that some dendrocolaptids characteristic of mixed-species flocks may be attracted to the activity of birds following the ants, rather than to the ants themselves and the prey flushed by them. Some of these woodcreepers appear to be unsure how to take advantage of ant swarms, with many species typical of flocks apparently lacking the patience required to forage over ants successfully. These birds spend little time with the ants before departing to seek a mixed-species flock.

Woodcreepers are chiefly insectivorous. In a comprehensive study of the diets of Brazilian birds, O. Schubart and colleagues listed many arthropods as being consumed by woodcreepers. F. Haverschmidt likewise provided orders and families of arthropods found in the stomachs of woodcreepers occurring in Surinam, and, more recently, A. Chapman and K. Rosenberg, O. Rocha and E. Peñaranda, and F. Puebla-Olivares produced detailed analyses of stomach contents for select species. In addition, B. Poulin and colleagues detailed emetic samples vomited from the stomachs of woodcreepers captured in northern Venezuela, and Willis has observed a variety of prey taken by birds of several species foraging over ant swarms. These studies reveal that woodcreepers typically take arthropods and that they occasionally take small vertebrates, and yet, with the exception of prey size, the diet differs little across species.

The most common food items are grasshoppers and crickets (Orthoptera), beetles (Coleoptera), cockroaches (Blattodea), ants (Formicidae), spiders (Araneae) and, in the case of some species, lizards. Woodcreepers take smaller quantities of leafhoppers and cicadas (Homoptera), bugs (Hemiptera), termites (Isoptera), earwigs (Dermaptera), ant-lions (Neuroptera), bees and wasps (Hymenoptera), flies (Diptera), moths (Lepidoptera), caterpillars and other insect larvae, dragonflies (Odonata), centipedes (Chilopoda), millipedes (Diplopoda), scorpions (Scorpiones), pseudoscorpions (Pseudoscorpiones), and even small snails (Mollusca) and crabs (Decapoda). Fruit pulp and small seeds have been found in the stomachs of a few dendrocolaptids, but it is unlikely that any woodcreeper consumes vegetable matter routinely. In a study of the stomach contents of five woodcreeper species from southern Mexico, Puebla-Olivares documented a suite of prey types for each. The Tawny-winged Woodcreeper took 26 types of prey, the Ivory-billed 20, the Olivaceous 18, and the Wedge-billed 12. The most important items in the diet of each species were spiders, beetles and wasps for the Tawny-winged Woodcreeper; spiders, caterpillars and various orthopterans for the Ruddy Woodcreeper; ants and beetles for the Wedge-billed Woodcreeper; beetles, spiders and ants for the Olivaceous Woodcreeper; and snails, beetles and orthopterans for the Ivory-billed Woodcreeper.

It is likely that all but the smallest woodcreepers take small vertebrates, in addition to arthropods. Small lizards, especially anoles (*Anolis*), constitute the most common vertebrate prey, especially for the ant-followers. In one study, vertebrates represented roughly 10% of the diet of the Plain-brown Woodcreeper. Skutch found that small lizards formed the bulk of items brought to nestling Tawny-winged Woodcreepers, although parents may preferentially feed young with such large prey. Some authors have speculated that lizards foraging at ant swarms are the most likely victims. Besides eating lizards, woodcreepers have been observed to take a variety of small frogs, salamanders, and even a few small snakes. Without question, the most unusual instance of a woodcreeper taking a vertebrate involved a Great Rufous Woodcreeper, observed as it pecked at and then ate a small bat.

Probably the biggest interspecific differences in dendrocolaptid diets are those between species that forage near the ground, over ant swarms, and species that pick or probe on trunks or other arboreal substrates. These differences are subtle, but, not surprisingly, ant-followers take a larger proportion of terres-

trial prey, such as grasshoppers and crickets, cockroaches, spiders and vertebrates, whereas arboreal woodcreepers consume proportionately more beetles, bugs and larvae. The White-chinned Woodcreeper is an opportunistic feeder, with the relative proportions of most prey taken approximating those of prey flushed by swarming ants, but it shows a strong predilection for grasshoppers and crickets, a weak liking for spiders, and a strong disdain for cockroaches. In the case of the Plain-brown Woodcreeper, however, deviation of the diet from samples of prey flushed by ants may reflect either a higher degree of selectivity or, more likely, a weaker dependence on ant swarms. Like the White-chinned Woodcreeper, the Plain-brown shows a preference for grasshoppers and crickets and a strong disdain for cockroaches, but, unlike that species, it takes many more beetles but many fewer spiders and ants than would be expected on the basis of samples of prey flushed by ants.

The diets of sympatric dendrocolaptids that feed by picking are extremely similar. The Buff-throated and Elegant Woodcreepers show an almost complete overlap in food preferences, despite their searching different substrates.

Chapman and Rosenberg concluded that the specialized foraging techniques used by woodcreepers do not result in specialized diets, at least not at the level of their study. A more detailed investigation, by Puebla-Olivares, revealed that dietary overlap was high but not complete, and that prey size may differ more than prey type. Taken together, studies by Puebla-Olivares and by Rocha and Peñaranda found that the diminutive Olivaceous and Wedge-billed Woodcreepers took primarily small prey, that the Long-tailed Woodcreeper fed on small and intermediate-sized items, and that the White-chinned, Tawny-winged, Ruddy, Ivory-billed and Buff-throated Woodcreepers captured prey of intermediate and large sizes. Pierpont, too, found variation in prey size across a suite of woodcreepers, with prey size positively correlated with body mass in sallying species, but only weakly so in woodcreepers that forage by picking.



**The Straight-billed Woodcreeper** is among the first birds to sing at dawn, and the last to sing at dusk. Whereas many woodcreepers seem to confine their vocal activity to these crepuscular moments, remaining virtually silent in daylight, this species also sings intermittently during the day. The frequency with which its voice is heard, particularly along Amazonian lakeshores and waterways, reveals its true abundance. It has been asserted that both sexes of woodcreepers sing, but it seems that in many species males alone give the true song; both sexes produce a variety of calls as a means of keeping in contact with their mates.

[*Xiphorhynchus picus picus*,  
Pantanal,  
Mato Grosso, Brazil.  
Photo: Haraldo Palo]





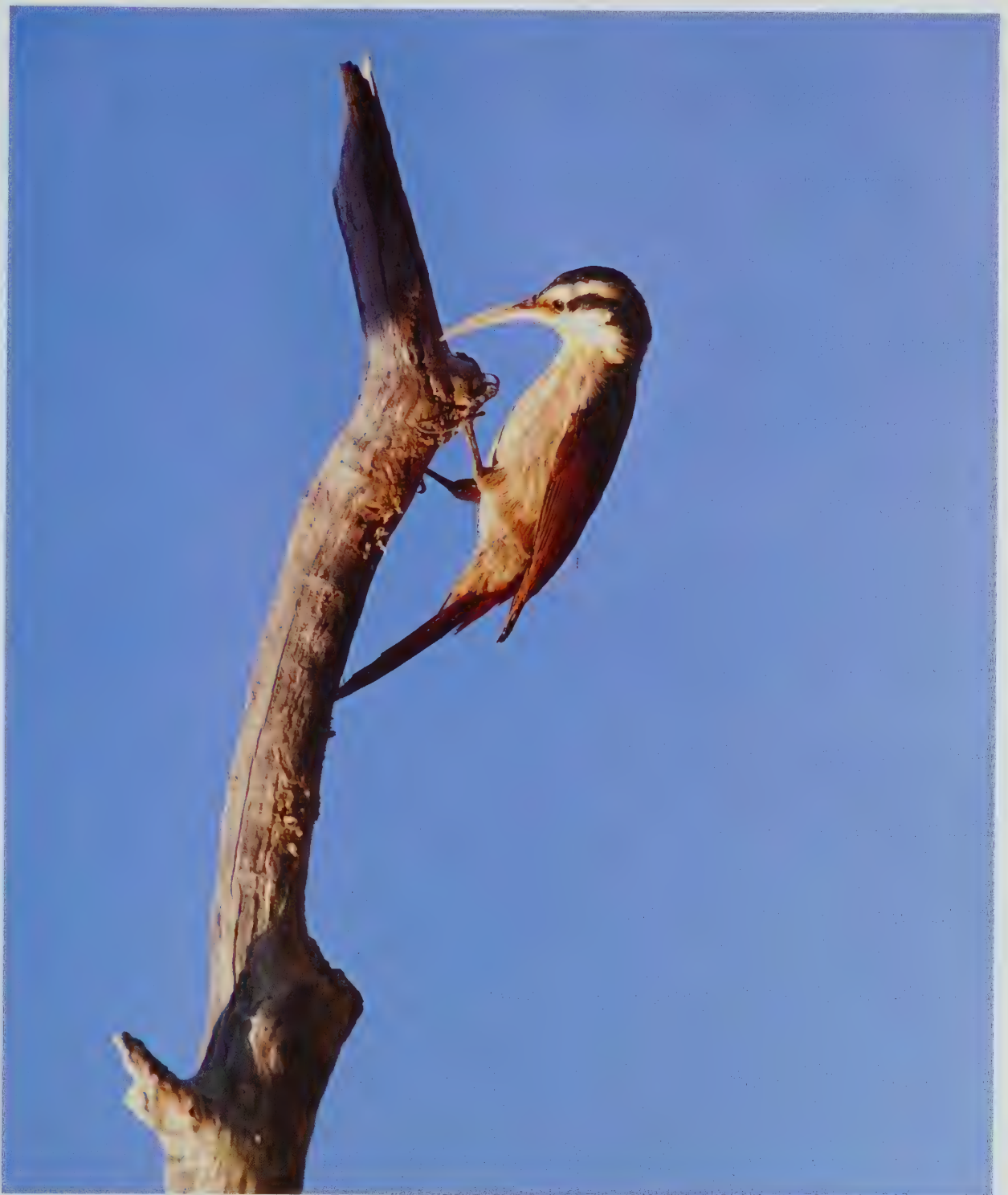
The song of the **Great Rufous Woodcreeper** is made up of a slightly descending series of two-parted "hic!-up" whistles, with a loud, ringing quality, and in this respect it is typical of the genus *Xiphocolaptes*. Because they tend to live in densely vegetated habitats, woodcreepers rely on voice as their primary means of communication. In common with most sub-oscines, most woodcreeper songs are not especially complex, but they are often loud and easily identifiable. Neither musical nor melodious, woodcreeper vocalizations tend to include sputtering or chipping trills, a series of whistles or double-whistles, explosive notes, whinnying sounds or prolonged rattles. In their various manifestations, they are among the most characteristic components of dawn and dusk choruses in Neotropical forests.

[*Xiphocolaptes major* major,  
Río Pilcomayo National  
Park, Formosa, Argentina.  
Photo: José & Adriana  
Calo]



Members of the genus *Lepidocolaptes*, such as the **Narrow-billed Woodcreeper**, forage using a classic woodcreeper technique, hitching. They climb trunks or large branches, often with a spiralling action, and while doing so they either glean prey from the bark's surface or probe with their slender bills into knotholes, vine tangles, moss clumps, or clusters of bromeliads and other epiphytes. Sometimes they use the bill to flake off or pry off bark in order to expose hidden prey. Woodcreepers usually forage singly, only infrequently or loosely accompanying their mates. Groups of woodcreepers consisting of more than a single pair are uncommon, and usually represent families, with one or both parents tending their dependent young.

[*Lepidocolaptes angustirostris bivittatus*,  
Pantanal,  
Mato Grosso, Brazil.  
Photo: Michel Günther/  
Bios]



### Breeding

Knowledge of the breeding biology of woodcreepers is limited. Much of what is known is derived from many years of observation by Skutch in Costa Rica, supplemented by studies by Oniki and Willis in South America. Two mating systems have been identified in the family. Most woodcreepers, especially the larger species, appear to be socially monogamous, with pair-bonds maintained throughout the year and both sexes taking part in all aspects of nesting and the rearing of young. By contrast, members of the genus *Dendrocincla*, and perhaps a few other woodcreepers, apparently do not form long-term bonds, instead being polygamous and, in the case of one species, possibly using leks.

In the cases of the Streak-headed and Spot-crowned Woodcreepers, the two species for which the data are most com-

plete, the mates share the tasks of nest-building, incubation, feeding of the nestlings, and care of the fledglings. It appears that these details apply also to other *Lepidocolaptes* species, as well as to members of the genera *Glyphorhynchus*, *Dendrocolaptes* and *Hylexetastes*. A Streak-headed Woodcreeper with abnormal plumage that nested on Skutch's ranch in Costa Rica allowed him to elucidate the relative effort expended by the male and the female. On the assumption that female woodcreepers incubate during the night, Skutch found that, in one season, the male spent much less time in incubating during the day than did its mate. In the following season, however, the sexes shared incubation duties more equally. Both parents brooded the newly hatched young, but the female not only brooded them for longer periods but also continued to brood them after the male ceased doing so. Provisioning rates were comparable for both parents. Although





Many woodcreepers join mixed-species flocks of birds that move through different forest strata in search of food. There are three main types of flock in tall forests: those of tanagers (Thraupidae) and other frugivores that travel through the canopy; those of *Hylophilus* greenlets and other canopy insectivores; and those of *Myrmotherula* antwrens, *Thamnomanes* antshrikes and other insectivores that travel through the lower and middle storeys. Most woodcreepers tend to accompany the third type, but a few species prefer the second; woodcreepers are rarely, if ever, found among flocks of frugivores. Even within broad categories of flocks, there are more specific preferences. At one site in Brazil, the **Planalto Woodcreeper** was found more frequently in understory flocks containing Cinereous Antshrikes (*Thamnomanes caesi*) than those without them. When not foraging with these flocks, it is often found with a different set of birds following army-ant swarms in the undergrowth, or it forages alone in the middle or upper storeys. At these times it seems to prefer trees with rough or mossy bark, rather than smooth or lichen-encrusted bark, and it occasionally peers into bromeliads.

[*Dendrocolaptes platyrostris platyrostris*, Río Pilcomayo National Park, Formosa, Argentina. Photo: José & Adriana Calo]



data for other dendrocolaptids are not so complete, several workers have noted that juveniles of a variety of woodcreeper species associate with both parents, and, in the case of the large species in the genera *Dendrocolaptes* and *Hylexetastes*, the young may remain with their parents for an extended period.

As mentioned in the preceding paragraphs, the breeding system of the genus *Dendrocincla* appears to differ from that of most of the Dendrocolaptidae. In the cases of the Plain-brown and the White-chinned Woodcreepers, the partners associate for only a brief period before one parent, presumably the female, takes on the duties of incubating the eggs and rearing the young. Willis noted that interactions begin aggressively, but the female soon accepts the male's advances. Some pair-members investigate possible nest-sites together, but the pair-bond seems to represent little more than this. Skutch's observations of another *Dendrocincla* species, the Tawny-winged Woodcreeper, confirm that one parent incubates and raises the young without assistance from its mate.

Although single-parent families are well known in the genus *Dendrocincla*, the reasons for the emancipation of males from the task of parental care remain unclear. Unlike most lekking species, the females of which feed their young with fruit or other abundant but often dispersed resources, woodcreepers focus instead on insects and small lizards, which are unlikely to be abundant in most circumstances. How females of species having the latter kind of diet succeed in provisioning the nestlings remains a puzzle. Willis speculated that the high degree of aggression displayed by these species, combined with dispersed but abundant food available at army-ant swarms, promotes this presumably polygamous system; even among those woodcreepers that forage primarily in association with ants, single-parent families are typical for some species but not for others. The Tyrannine Woodcreeper has taken this mating system a step further: during the breeding season, the males broadcast unusually loud songs from prominent ridgetops. Although unexpected for a plainly marked, insectivorous species, this behaviour recalls a mating system in which males gather on exploded, or dispersed, leks, a system that Willis and Oniki proposed as be-

ing the optimal one for a scarce species dependent on dispersed resources and occurring in a thickly vegetated environment. One can only speculate on the importance of phylogenetic inertia in forcing this species into a difficult situation, one in which the young are raised by a single parent in an environment less suited to this lifestyle than are the lowlands frequented by other *Dendrocincla* species.

The breeding cycle is complex. The members of Dendrocolaptidae, taken as a whole, breed in every month of the year, with year-round breeding likely to be the rule when considering the entire ranges of widespread species such as the Plain-brown, Wedge-billed and Olivaceous Woodcreepers. It is important, therefore, to examine patterns not only by species, but also by region. Woodcreepers in more northerly latitudes breed primarily during the boreal spring and summer, and those in southern latitudes during the austral spring and summer. Seasonality of breeding by populations living in equatorial regions is more difficult to assess, but it appears to be associated with seasonal rains. The majority of species breed either late in the dry season or early in the wet season, but some species in the Guianas and nearby regions breed during both the long and the short dry seasons. In addition, despite concordant seasonality of the rains in central and eastern Amazonian Brazil, the breeding seasons of woodcreepers may be, on average, somewhat earlier in the year in southern Amazonia than they are near Manaus. Indeed, Oniki and Willis found little seasonality of nesting in eastern Amazonia, near Belém.

Other aspects of breeding biology are remarkably constant throughout the family. All woodcreepers nest in cavities, in which they lay small clutches of white, unmarked eggs in a shallow cup, or on a bed of bark flakes or wood shavings. Woodcreepers place their nests in a variety of hollows. They are partial to natural cavities in rotting stumps or those created when branches break off trees, but various dendrocolaptids have nested in abandoned termite nests, between buttress roots, amid vine tangles, within hollow bamboo poles, and at the bases of palm fronds. There is no evidence that woodcreepers excavate their own cavities, even though some of them may enlarge the entrance to a pre-existing cavity. Several species use abandoned woodpecker holes, and

**The Northern Barred Woodcreeper** spends much of its time at army-ant swarms. Single birds, pairs, and occasionally small groups join swarms, where they are dominant over several other species of woodcreeper and antbird (*Thamnophilidae*). When not with ant swarms it is sometimes found in association with troops of monkeys, especially squirrel monkeys (*Saimiri*) and capuchins (*Cebus*). Mixed groups of these primates travel noisily through the subcanopy, generally causing havoc in search of fruit, small vertebrates and insects. Whenever living prey breaks from cover, or manages to escape, the accompanying woodcreepers are ready to pounce.

[*Dendrocolaptes sanctithomae sanctithomae*,  
Chan Chich, Belize.  
Photo: R. & N. Bowers/  
VIREO]







All woodcreepers are largely insectivorous, and the **Scimitar-billed Woodcreeper** is no exception. Its diet includes locusts, caterpillars and the larvae of beetles and ant-lions. It also consumes large quantities of non-insect prey, such as spiders, centipedes, millipedes and scorpions; it has even been recorded consuming vegetable matter on occasion. Unlike all other woodcreepers, it seems to take most food items from the ground, although it also forages in trees and cacti by probing into crevices and bromeliads.

[*Drymornis bridgesii*,  
Cayastá, Santa Fe,  
Argentina.  
Photo: Martín de la Peña]

the Scimitar-billed Woodcreeper has been recorded nesting in an abandoned nest of a Rufous Hornero (*Furnarius rufus*) and in a chimney. The Narrow-billed Woodcreeper, characteristic of open habitats, occasionally nests on bridge supports, cement columns, and a variety of other man-made structures.

Most woodcreeper nests have been found near the ground, a fact that may reflect a preference for low sites, or the availability of suitable cavities, or the ease for researchers of locating such sites. Of dendrocolaptid nests described in the literature, the majority have had entrances within 5 m of the ground, and few have been above 10 m. The entrances to some nests are only just above the ground, and, in a few instances, nest-cavities are subterranean.

The nest itself is either a shallow cup, lined sparsely with dark rootlets, dried leaves, stems or other plant fibres, or merely a bed of chips or flakes of wood or bark. Deep cavities may be filled with bark chips and wood flakes, upon which the nest is placed. The filling was nearly 50 cm deep in a cavity contested by both a pair of Streak-headed Woodcreepers and a female Tawny-winged Woodcreeper. The nest entrance is often a long, narrow slit, which can cause adults to contort the body when entering. Skutch documented that some nests have an entrance at the top, rather than at the side, so that the occupants are exposed to the elements. He speculated that roosting sites of this type indicate that protection from predators may be more important than protection from the elements, but Oniki found that flooding from heavy rains was a key cause of nestling mortality among Wedge-billed Woodcreepers near Belém.

As mentioned above, woodcreepers lay plain white eggs. Some authors have commented that the eggs can have a pinkish or greenish cast, but most have noted little more than a slight gloss. Looking at all members of the family, the eggs vary in shape and in size, the latter weakly correlated with body size. Clutches typically comprise two eggs, less frequently three. Three-egg clutches are regularly laid only by the Scimitar-billed Woodcreeper and members of the genus *Lepidocolaptes*, and a four-egg clutch may be unique to the Narrow-billed Woodcreeper. Clutches containing a single egg are occasionally laid by a variety of dendrocolaptids, but only some of the largest species, such as the Red-billed Woodcreeper, may routinely lay a single egg. There is no apparent correlation between clutch size and the system of parental care; because most woodcreepers lay either two or three eggs, however, such a correlation would be difficult to confirm, given the paucity of data. The Scimitar-billed Woodcreeper lays on consecutive days, but the Wedge-billed Woodcreeper lays on alternate days.

In most woodcreeper species, both sexes incubate the eggs. In the case of *Dendrocincla* species and possibly some members of other genera, however, only one parent, presumably the female, does so. Detailed observations by Skutch at a nest of Streak-headed Woodcreepers revealed that the eggs were tended for 60-66% of the observation period. In one season, Skutch observed 13 incubation sessions by the apparent female, these averaging 38 minutes, with a range of 7-72 minutes, but only three sessions by the male, which averaged 28 minutes and ranged from 15 to 42 minutes. In a



These photographs show **Narrow-billed Woodcreepers** with a variety of prey items including an adult lepidopteran, a centipede and the tail of a small lizard, the remainder of which presumably escaped! This same species has even been seen taking a small frog.

Judging from an examination of the stomach contents of specimens, most of its prey is 5-15 mm in length, and its diet comprises a variety of invertebrates not pictured here: ants, bees, various beetles, earwigs, bugs, cockroaches, caterpillars, flies, termites, and spiders. As befits the broad range of its taste, it is one of the most opportunistic woodcreepers, having adapted to a variety of man-modified environments. It is one of the few birds in its range that regularly forages on fence-posts and exotic Eucalyptus trees.

It has even been seen perching on a metal barrel catching flies, as well as sallying after moths and other insects attracted to streetlights well before dawn.

[*Lepidocolaptes angustirostris*.

Top left and bottom right:  
*L. a. bivittatus*,  
Minas Gerais, Brazil.  
Photos: Anita Studer.

Top right: *L. a. praedatus*,  
Villa La Ñata,  
Buenos Aires, Argentina.  
Photo: José Leiberman.

Bottom left: *L. a. praedatus*,  
El Palmar National Park,  
Argentina.  
Photo: Hernán Povedano]







The **Lineated Woodcreeper** is one of very few dendrocolaptids adapted to life in the canopy of rainforest, where it spends most of its time following flocks consisting largely of greenlets (*Vireonidae*), tanagers (*Thraupidae*) and tyrant-flycatchers (*Tyrannidae*). It forages less on trunks than most woodcreepers, and more on large branches, often hitching along the underside of these when they are angled or horizontal. It is never seen in the understorey, although it sometimes descends to the middle storey in the absence of competitors of the genus *Xiphorhynchus*, which normally dominate access to resources.

[*Lepidocolaptes albolineatus fuscicapillus*, Tambopata-Candamo Reserved Zone, Peru. Photo: Tui de Roy]

subsequent season, the female of this same pair completed eleven sessions, with a mean duration of 27 minutes and a range of 5-57 minutes; the male's eight sessions lasted for 16 minutes on average, with extremes of 6 and 37 minutes. The nest was left untended 14 times in the first season, for periods of 2-41 minutes, with a mean of 21 minutes, and 17 times during the second, when periods of absence were similar, at 4-41 minutes, with an average of 17 minutes. The behaviour of a pair of Spot-crowned Woodcreepers was similar, although these birds tended the nest for 82% of the observation period, with the incubating bird more often waiting for its mate to arrive before it departed from the nest.

Incubation patterns shown by the Tawny-winged Woodcreeper are different. Skutch reported that the lone parent, presumably the female, spent longer periods incubating, but also longer periods away from the nest. During one morning of observation, the sitting bird remained on the eggs for three periods of 47-87 minutes' duration, these separated by recesses of 26 and 39 minutes. In all, the incubating bird tended the eggs for just over 60% of the time, a figure comparable to the total time that both members of the Streak-headed Woodcreeper pair spent on their eggs.

In woodcreepers incubating adults often return to the nest with a small piece of wood or bark. In fact, this behaviour was used by Skutch to determine the time of hatching, because the pieces of nest material were replaced by food items as soon as the young hatched and needed to be fed. The continued addition of inedible items to the nest throughout the incubation period is most interesting, but its function remains unknown.

The incubation and nestling periods of woodcreepers are poorly known, but those species in which the pair-members cooperate in these duties have shorter periods than do those in which only one parent cares for the young. From the limited information available, the relatively large Scimitar-billed Woodcreeper has the shortest incubation period, lasting 14 days, but its nestling period is of an average duration of 21 days. The shortest nestling period in the family is that of the tiny Wedge-billed Woodcreeper, the young of which leave the nest after 17 days. *Xiphorhynchus* and *Lepidocolaptes* species of comparable size have incubation and nestling periods of comparable length. For example, the Elegant Woodcreeper incubates for at least 16 days and tends its chicks for 18-19 days, whereas the Cocoa Woodcreeper tends its nestlings for 20 days, during which a sin-

gle parent may raise the young alone; in *Lepidocolaptes*, the Streak-headed Woodcreeper incubates for 15 days and tends its nestlings for 18-19 days, the respective periods for the closely related Spot-crowned Woodcreeper being 17 days and 19 days. Species in the genus *Dendrocincla* require longer, probably because the single parent has less time to devote to incubation and to the feeding of its brood. For example, the Tawny-winged Woodcreeper incubates the eggs for 20 or 21 days and tends nest-



The **Lesser Woodcreeper**, seen here in possession of a large beetle larva, rarely forages on branches. It spends most of its time on trunks, climbing these from the understorey to medium levels, often ascending only a short distance before moving on to the next tree. For this reason, it is generally encountered less than 5 m up, and usually within 15 m of the ground. Despite an apparent preference for using larger than average trees, most of its actual foraging time is spent on sections of trunks that are relatively slim.

[*Xiphorhynchus fuscus atlanticus*, Alagoas, Brazil. Photo: Anita Studer]

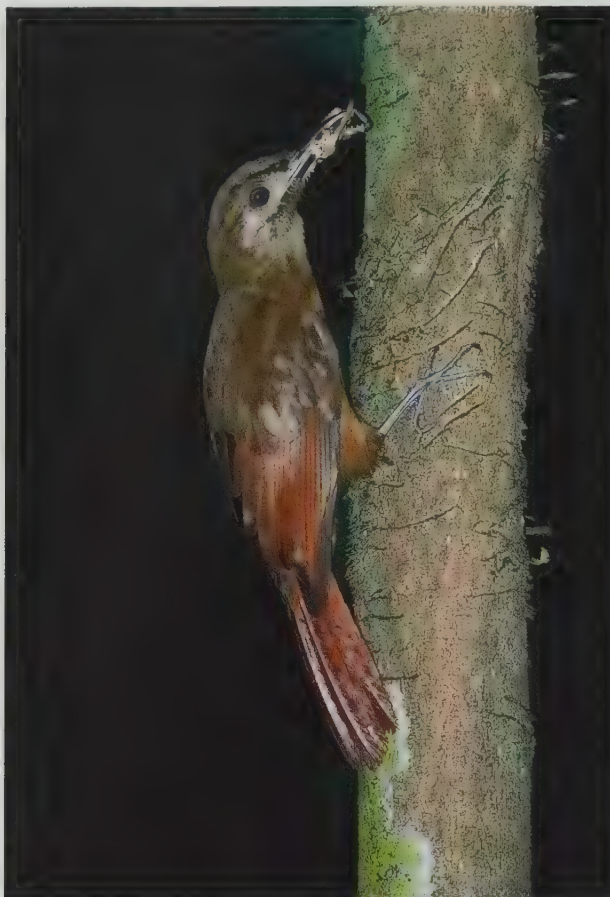
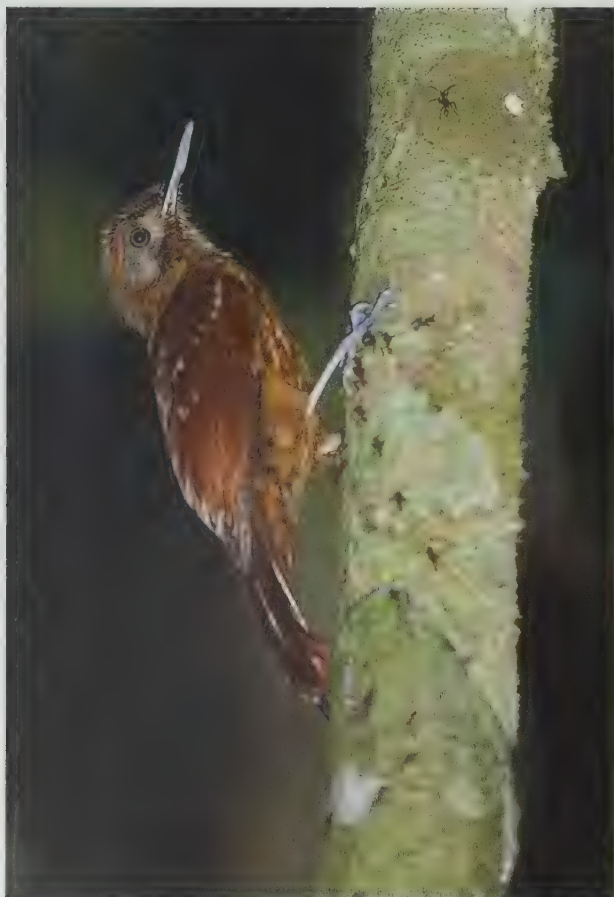




The **Great Rufous Woodcreeper** frequents the same Chaco woodlands as the Scimitar-billed Woodcreeper (*Drymornis bridgesii*). Likewise, it forages terrestrially, although not as often, nor with the same dexterity: *Xiphocolaptes* hops clumsily whereas *Drymornis* runs with ease. Despite this handicap, the Great Rufous Woodcreeper descends regularly to rummage through leaf litter or dig in soft earth, especially in open habitats. At such times, it somewhat resembles a flicker (*Colaptes*). Its diet consists mainly of arthropods, but also includes vegetable matter, snails and fairly large frogs, much of which it probably finds while foraging on the ground. It has even been reported attacking a 40-cm long snake and eating a bat.

[*Xiphocolaptes major*  
major,  
Río Pilcomayo National  
Park, Formosa, Argentina.  
Photos: José & Adriana  
Calo]





A few woodcreepers in the genera *Hylexetastes*, *Dendrocolaptes* and *Dendrocincla* are regular followers of ant swarms. The **Plain-brown Woodcreeper** is one such species, regularly joining the mixed groups of thamnophilid antbirds that accompany swarms. As with antbirds, it is not the ants that the woodcreepers are after, but the invertebrates that the ants flush from shelter. The foraging technique of these woodcreepers at swarms is different from their usual style: they climb less and spend more time waiting for prey to move. From their perches on slender stems (often covered in ants, as here), they swoop on any insect that breaks cover.

[*Dendrocincla fuliginosa* ridgwayi, Soberania National Park, Panama. Photos: Marie Read]

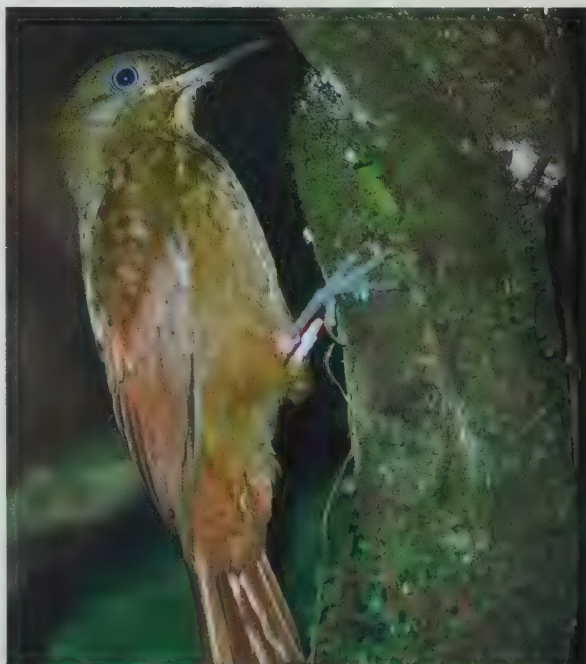
lings for 24 days, and the Plain-brown Woodcreeper tends its nestlings for 23-25 days.

Nestling woodcreepers are fed with a variety of prey, usually one item at a time, and in most cases by both parents. In species of *Dendrocincla* and possibly other genera, however, only one parent feeds the chicks. There is a tendency for the adults to deliver small prey to younger nestlings, but larger prey to older young. Some authors have further suggested that the parents provision young with relatively large items, perhaps compensating for their intermittent visits to the nest. The large size of some prey sometimes makes identification possible. Skutch noted that a Tawny-winged Woodcreeper provided its young with insects when they were small, but mostly with small lizards, and a few spiders, after the chicks were a week old. The Northern Barred and Cocoa Woodcreepers also bring small lizards to the nest, but the Streak-headed and Spot-crowned Woodcreepers deliver chiefly brown insects, and the Wedge-billed Woodcreeper delivers tiny items that are almost impossible to identify in the field. The stomach contents of two nestling Lesser Woodcreepers comprised spiders, orthopterans and a beetle larva.

Provisioning rates vary, depending in part on the number of parents involved. Skutch found that, during a five-hour period, a female Streak-headed Woodcreeper brooded its two-day-old chicks for 131 minutes, and the male brooded them for 43 minutes, the parents bringing food to the nest 16 times in total. During a subsequent four-hour period, the female alone brooded the eight-day-old young only briefly, and the parents visited the nest 21 times. Finally, when the young were 15 days of age, they were not brooded at all, even during the night, and the parents delivered food to the nest 32 times during a three-hour period. Provisioning rates and prey types were similar for the Spot-crowned Woodcreeper. By comparison, a female Tawny-winged Woodcreeper likewise brooded her young frequently when they were newly hatched, but her provisioning rates were substantially lower than were those of the two *Lepidocolaptes* species. During multiple six-hour periods, the female visited the nest six times when it contained a single day-old nestling, nine times when there were two nestlings aged 3 days, twelve times when the young

were aged 9 days, and 16 times when they were 17 days old. Thus, provisioning rates by a lone parent were less than half those at *Lepidocolaptes* nests attended by two parents. The Tawny-winged Woodcreeper may, however, compensate by bringing larger prey to the nest. Skutch also reported that nestlings of species with biparental care are much more vocal than are those tended by a single parent. Perhaps young with single parents are quieter because of the increased risk of predation.

Fledgling woodcreepers remain with their parents for an extended period, with those of large species apparently being dependent on their parents for longer than are fledglings of small



This race of the **White-chinned Woodcreeper** is best identified, not by its chin, but by its pale blue eyes. It is an obligate ant-follower, sometimes gathering in small groups at large swarms. When not at swarms, individuals sometimes forage in association with herds of white-lipped peccaries (*Tayassu pecari*). These malodorous pigs flush prey much like swarming ants. One White-chinned Woodcreeper was even seen perched on a peccary, which may explain the peccary-like aroma of many mist-netted individuals.

[*Dendrocincla merula bartletti*, Cocha Cashu, Manu National Park, Peru. Photo: Gustavo Londoño]





Most ant-following birds rarely eat army ants; if and when they do so, it is by accident. It is the arthropod disturbed by the ants that provides the meal, as it hops, scuttles or flutters from its hiding place, desperately seeking new shelter. Fleeing insects will often have ants attached to them, and it is generally at these times that the ants themselves are inadvertently eaten.

This **Planalto Woodcreeper** is holding prey that was caught at the periphery of an ant swarm, in the mountains of south-east Brazil. This species is frequently found with ant swarms, often alone, but sometimes in pairs. At these times females are dominant over males. Both sexes are dominant over smaller antbirds, tanagers, and Dendrocincla woodcreepers, but they are usually subordinate to the Buff-throated Woodcreeper (*Xiphorhynchus guttatus*).

Pecking orders at ant swarms are usually well defined.

[*Dendrocolaptes platyrostris platyrostris*, Itatiaia National Park, Rio de Janeiro, Brazil. Photo: Edson Endrigo]





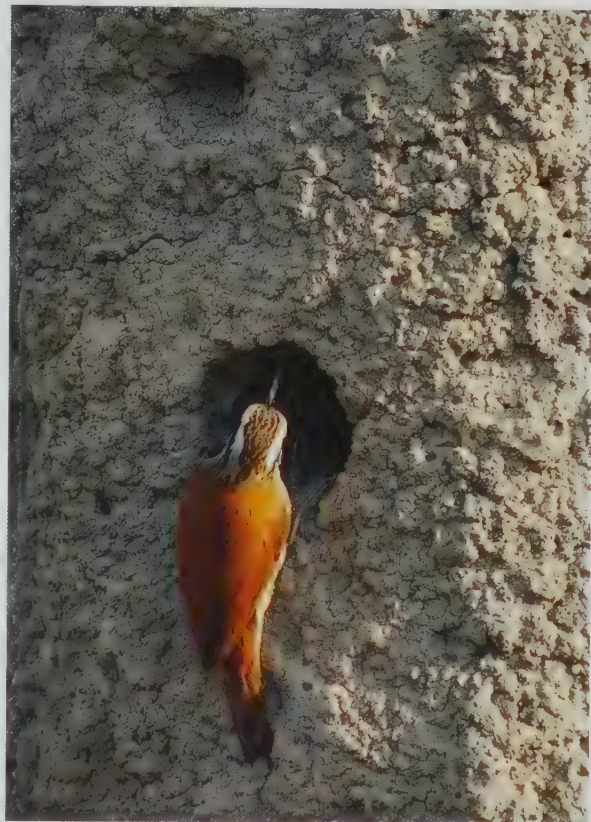
Members of the genus *Dendrocincla*, and perhaps a few other woodcreepers, are polygamous. As for the remainder of the family, the **Narrow-billed Woodcreeper** is typical in that it appears to be socially monogamous. Pairs remain in association throughout the year, sharing the defence of large, multi-purpose territories, in which they forage and breed. All woodcreepers nest in cavities, usually in trees. The nest-site might be a natural hole, as here, or an old woodpecker (*Picidae*) excavation. In this species, nest entrances are generally fairly low, from just above ground level to 4 m up. The cavities range from 20-160 cm in depth, and often have a surprisingly narrow entrance, which may be slightly enlarged and rounded by the birds. When nest entrances are long, narrow slits, adults may be forced to contort the body when entering.

[*Lepidocolaptes angustirostris angustirostris*, Rio Pilcomayo National Park, Formosa, Argentina. Photo: José & Adriana Calo]



Although most species of woodcreeper are only known to nest in trees, the **Narrow-billed Woodcreeper** has been reported nesting in various situations. Recorded nest-sites have included holes in cement columns, bridge supports, and other man-made structures. In some regions, including the Pantanal, they regularly use holes in termite nests. Such holes have usually been excavated by another species of bird, in this case probably a **Campo Flicker** (*Colaptes campestris*).

[*Lepidocolaptes angustirostris bivittatus*, Pantanal, Mato Grosso, Brazil. Photo: Michel Günther/Bios]



species. At the extreme, young Red-billed Woodcreepers may remain with their parents until early in the year after fledging, but for most species the period of dependence probably lasts for no more than a few months. There is no evidence that fledglings return to their natal cavities to roost; instead, they either locate or are shown alternative roosting sites.

When dual parental care is the case, the parents either will travel together with their offspring, as a group, or will split up, with each parent then accompanying a single fledgling. For those

species in which the young are raised by a single parent, groups of three birds probably represent mothers with their offspring. Willis noted that family groups of ant-followers forage away from ants when the young are only recently fledged, but attend swarms together when fledglings are older. He also noted a moderate degree of aggression between parents and young, manifest in some species as the young being dominant over one parent, presumably their father, but subordinate to the other, presumably their mother. Over time, aggression by parents probably increases until, finally, the young leave the natal territory.

## Movements

In common with most birds frequenting the interior of Neotropical forests, dendrocolaptids are largely or exclusively sedentary. There is no evidence to suggest that any woodcreeper species is truly migratory, although limited, anecdotal evidence indicates that some do wander short distances. A small degree of altitudinal movement probably takes place near mountains in Central America, especially in Mexico, near the northern limit of the family's distribution. The White-striped Woodcreeper, for example, has occurred at unusually low elevations in southern Sonora and, similarly, the Spot-crowned Woodcreeper has wandered to the Caribbean lowlands from Mexico south to Costa Rica. Records of the Ruddy and Long-tailed Woodcreepers from La Selva Biological Reserve, in Costa Rica, suggest some downslope movement, because these species normally frequent higher elevations in nearby foothills. The Black-banded and Strong-billed Woodcreepers have shown similar downslope movement in Honduras. Conversely, records from Monteverde Forest Reserve, also in Costa Rica, imply that some lowland species, such as the Wedge-billed Woodcreeper, move upslope after breeding. Nonetheless, long-term studies at various sites have documented the year-round presence of most species at most sites, demonstrating that movement, when it does occur, probably represents wandering by a few individuals, rather than migration by the population as a whole.

Few woodcreepers occur on islands, even continental ones only a few kilometres offshore, further attesting to their sedentary nature. Only Trinidad harbours more than two dendrocolaptids, and even there the complement of five woodcreeper

As in most widespread species of woodcreeper, the **Red-billed Scythebill** does not have a clearly defined breeding season throughout its range.

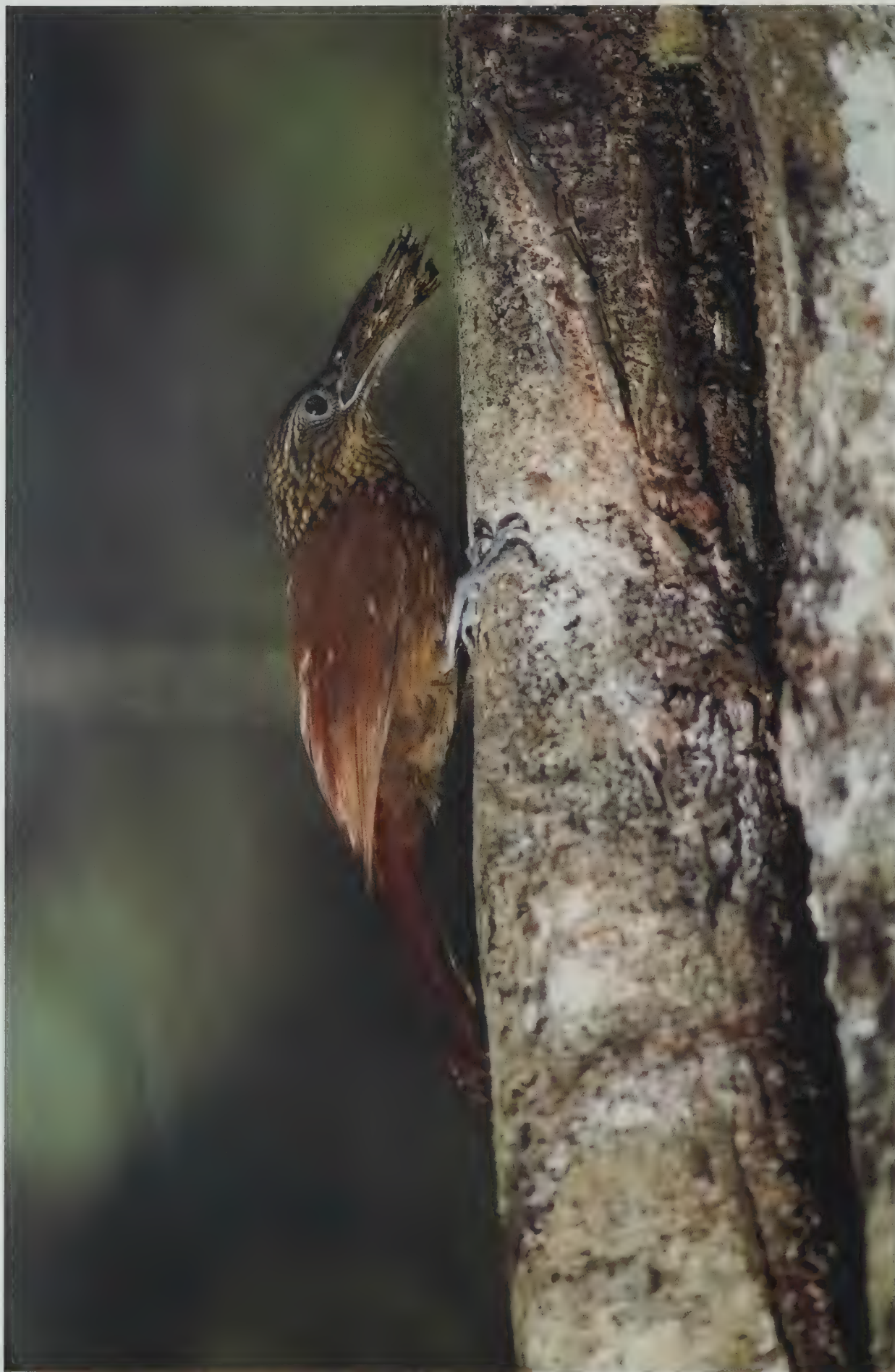
Although it may nest seasonally at particular sites, its overall range is so broad, and climatic patterns within this range so varied, that breeding probably takes place all year round. Only a few nests have been reported, however, these being sited in tree cavities or hollows formed inside broken stumps; in this case, it is a palm stump from which the centre has rotted out. In some cases, the nests of woodcreepers are located very close to the ground, or in cavities so deep that they are actually subterranean.

[*Campylorhamphus trochilirostris lafresnayanus*,

Kaa-Iya del Gran Chaco National Park, Bolivia. Photo: Luiz Claudio Marigo]







In most woodcreepers, especially the larger species, both sexes take part in all aspects of nesting and the rearing of young. One of the first parental duties during the breeding season is nest preparation. This is achieved by dropping bark flakes or wood shavings into a suitable cavity to form a soft bed. Once a shallow cup has been formed, a small clutch (usually two) of unmarked white eggs is laid. During incubation, many woodcreepers repeatedly return to the nest with small pieces of wood or bark. The function of this interesting behaviour is unknown, although it must have the effect of augmenting the bed of soft material. When the eggs hatch, the adults tend to carry in no more nest material, instead bringing items of food for their hungry chicks. So distinct is this switch in adult behaviour that it can be used to estimate the timing of hatching. The bill of this **Cocoa Woodcreeper** is crammed with wood-chips, and for this reason we can be fairly sure that its eggs have not yet hatched.

[*Xiphorhynchus susurrans*  
nanus,  
Gamboa, Panama.  
Photo: Marie Read]



As woodcreeper chicks usually lurk at the bases of dark cavities, very little is known about them. This **Elegant Woodcreeper** is just a few days old, still blind, and still bearing the fluffy down which was present shortly after hatching. The incubation period in this species is estimated at 16 days, and the nestling period at 18-19 days. This latter phase is more protracted in those woodcreeper species in which males do not contribute to parental care.

[*Xiphorhynchus elegans insignis*,  
Cocha Cashu,  
Manu National Park, Peru.  
Photo: Gustavo Londoño]



species is greatly reduced in relation to that found in the forests of coastal Venezuela, within sight of the island. Apart from Trinidad, the only islands supporting woodcreepers are Tobago, which has one species, and Isla Margarita, off northern Venezuela, where two species are found. The loss of at least one, and possibly two, species from Barro Colorado Island since its isolation from the Panamanian mainland testifies to the inability of woodcreepers to colonize suitable habitat across even a narrow water barrier.

A further demonstration of the sedentary nature of woodcreepers is provided by ringing studies. Ringing returns from a variety of sites have involved individuals recaptured on the same territories several years after they were initially ringed. Moreover, all five Tawny-winged Woodcreepers and three of four Olivaceous Woodcreepers captured at a site in Mexico returned to their territories shortly after having been being deliberately displaced.

## Relationship with Man

Considering their inconspicuous songs, drab plumage, small size, retiring habits, and the forested habitats they frequent, the relationship of woodcreepers with humans is predictably limited. Only the most astute human denizens of tropical forests distinguish between woodcreepers and woodpeckers. For example, Amazonian *campesinos* and *caboclos* often refer to woodcreepers as *carpinteros* or *pica-paus*, the same terms as those that they use for woodpeckers. Some observers are aware of the generally reddish coloration of woodcreepers, and the better woodsmen, or *mateiros*, notice that these birds rarely peck at wood in the manner of woodpeckers, but, in general, dendrocolaptids evade detection.

Woodcreepers are not hunted in any numbers, probably because even the largest species are not worth the effort. Even the moderately large Moustached Woodcreeper, the only dendrocolaptid considered to be globally threatened (see Status and Conservation), is believed to be adversely affected by habitat loss, but not by hunting. The dull plumage patterns and unremarkable songs of woodcreepers afford them little popularity among aviculturalists; likewise, their earth-toned feathers are unlikely to be prized by indigenous peoples. Thus, the only interaction between man and woodcreepers is an indirect one: the adverse impact of man that results from the loss and fragmentation of the mature forests that most dendrocolaptids need for their survival (see Status and Conservation).

## Status and Conservation

As woodcreepers are mostly inconspicuous birds of the forest interior, direct human exploitation does not constitute a threat to them. Among their natural enemies, snakes seem to be regular predators at woodcreeper nests, feeding on both eggs and nestlings, and forest raptors probably take a few juveniles and adults. Without doubt, the major threat to the long-term survival of the members of this and many other avian families is loss and fragmentation of the forests in which they live. Forest clearance and fragmentation, primarily through logging and for agriculture, have increased tremendously in the last 50 years

Two adult **Narrow-billed Woodcreepers** perch momentarily at the entrance to their nest, one carrying a beetle for its brood. In this species, as with most woodcreepers, both adults share the duty of feeding the nestlings. The items that they deliver are not regurgitated, but are carried to the nest in the bill tip, one at a time. The size of items delivered increases as the nestlings age. For this reason, woodcreeper chicks might receive small insects in the first week after hatching, and lizards during the last week before fledging. By delivering the largest consumable prey items at any given time, parents minimize the frequency of their visits.

[*Lepidocolaptes angustirostris bivittatus*,  
Minas Gerais, Brazil.  
Photo: Anita Studer]





throughout the Neotropics, and many projections indicate a continuing escalation in habitat destruction for several decades to come.

The Moustached Woodcreeper is the only dendrocolaptid currently listed as globally threatened, being designated as Vulnerable. Not only is this species uncommon and local throughout its range, but it requires intact or, at most, only slightly disturbed tracts of semi-deciduous or dry forest that grows on the richest soils in the interior of north-eastern Brazil. Sadly, forests in this region are being converted at an alarming rate to charcoal, used to fuel the steel and pig-iron industries. In addition, large-scale irrigation projects promote clearance of dry forest for agriculture. As a consequence, it is estimated that less than 5% of the area originally covered by tropical dry forest in north-eastern Brazil will remain intact in the near future. Illustrating the rapidity of the destruction of dry forest, and the concomitant threat to the Moustached Woodcreeper, a large tract of undisturbed forest near Coribe, in the state of Bahia, harboured a substantial population of these birds in 1988, but had been completely cleared by 1993. Under such pressures, local populations of the Moustached Woodcreeper disappear or, at best, are reduced and fragmented, a situation that seriously threatens the species' long-term survival. Although the Moustached Woodcreeper is protected under Brazilian law, the most important step towards its preservation will be the establishment of a network of conservation areas across the interior of north-eastern Brazil aimed at protecting undisturbed tracts of dry forest. Despite the recent creation of several reserves in the region, most notably Serra do Baturité State Environmental Protection Area, in Ceará, and Cavernas do Peruaçu National Park, in Minas Gerais, a network of reserves still did not exist in 2001.

The only woodcreeper currently regarded as Near-threatened is the Greater Scythebill. This poorly known species is uncommon to rare and locally distributed along a narrow and discontinuous belt of montane forest in the middle and upper elevations of the central and northern Andes. It is likely that

some of its populations were extirpated as a result of recent clearance of large tracts of montane forest along river valleys in northern Peru, Ecuador and Colombia. Additional data are sorely needed to enable an accurate assessment of this species' conservation status.

The Tyrannine Woodcreeper is another uncommon and local species restricted to montane forest in the Andes. It was included in a preliminary "blue list" for Colombia, and probably merits consideration as being globally threatened. The Tyrannine Woodcreeper is somewhat better known than the Greater Scythebill, unlike which it has been reported, if only rarely, in older second growth, at forest edges and even in clearings, perhaps indicating some degree of tolerance of habitat disturbance. Regardless of that possibility, any species that occupies a narrow elevational belt of montane forest in the Andes is at moderate risk, not only from habitat loss, but also from episodic natural catastrophes such as earthquakes and volcanic eruptions.

As 0woodcreepers are sedentary and, in most cases, favour the forest interior, even locally abundant species are vulnerable to forest destruction and fragmentation. For example, a protected forest fragment in south-eastern Brazil was inhabited by the Plain-winged, Olivaceous, Planalto and Lesser Woodcreepers and the Black-billed Scythebill (*Campylorhamphus falcularius*), but all five species disappeared from the site between 1975 and 1992. Possible explanations were the loss and degradation of most of the undisturbed forest at the site, combined with the fragment's extreme isolation, which prevented recruitment and establishment of immigrants from neighbouring source areas. Only those species capable of crossing large unforested gaps, a category which excludes these woodcreepers, were able to recolonize the remaining 250-ha fragment. Local extinction of the Northern Barred Woodcreeper on Barro Colorado Island, following its isolation when Gatún Lake was created during the construction of the Panama Canal, further illustrates the inability of woodcreepers to disperse across a water barrier. These



This **Spot-crowned Woodcreeper** is about to deliver food to its nestlings in a mossy cloudforest tree. Begging chicks are unusually noisy in this genus, and as such their calls are easily audible from outside the nest. After roughly 19 days, during which time they are provisioned with insect larvae, spiders, cockroaches, and other items, they will fledge. As with most woodcreepers, the young do not return to the nest after once leaving it, but continue to be fed by both parents. In most cases on record, there appears to be no division of the brood: juvenile woodcreepers typically associate with both parents, often for at least a month, and in some cases considerably longer.

[*Lepidocolaptes affinis neglectus*,  
Rancho Redondo,  
San José, Costa Rica.  
Photo: Manuel Marín]





The only dendrocolaptid currently considered threatened with extinction is the **Moustached Woodcreeper**, a species that only occurs in undisturbed dry or semi-deciduous forest on rich soils in the interior of north-eastern Brazil, a habitat that is itself very local and uncommon. The patches that remain are disappearing rapidly as trees are cleared to produce charcoal and to make way for the expansion of irrigated agriculture. To halt the decline in this species an effective system of protected areas is required, alongside the promotion of sustainable forest use at all unprotected sites.

[*Xiphocolaptes falcirostris franciscanus*, north of Itacarambi, Januária, Minas Gerais, Brazil. Photo: Juan Mazar Barnett]

and other studies illustrate that the detrimental effects of habitat fragmentation can result in the complete disappearance of woodcreepers even from protected sites.

Habitat fragmentation is a serious threat to woodcreepers even in vast areas of undisturbed forest in the Amazon Basin. In central Amazonia, small fragments of forest may not contain enough active army-ant colonies to support birds that rely on them. Hence, species such as the White-chinned, Red-billed and Black-banded Woodcreepers disappear rapidly from fragments smaller than 100 ha, and their numbers are much reduced even in larger fragments. Those that forage mostly with mixed-species flocks, such as the Spot-throated Woodcreeper, are also adversely affected by forest fragmentation, largely because most flocks wander over an area of at least 10 ha. Mixed-species flocks often disband following fragmentation, with the result that species that are obliged to forage with flocks disappear quickly, leaving only those that are efficient solitary foragers. Only species possessing sufficient flexibility in their diet and foraging behaviour, such as the Plain-brown, Wedge-billed and Chestnut-rumped Woodcreepers, persist in small fragments in similar or slightly increased numbers.

Moreover, fragments are not nearly so isolated from continuous forest at Amazonian sites as they are in the Atlantic Forest of south-eastern Brazil, where rapid and extensive development around some of the largest cities in the world, most notably São Paulo and Rio de Janeiro, has reduced once continuous forest to small, isolated patches. The loss and fragmentation of forest is even more evident farther north, in coastal eastern and north-eastern Brazil, where little intact forest remains and many woodcreeper populations are threatened. Most at risk in the coastal lowlands of eastern Brazil are several endemic subspecies: race *taumayi* of the Plain-brown Woodcreeper, *cuneatus* of the Wedge-billed Woodcreeper, and the nominate races of both the Buff-throated Woodcreeper and the Red-billed Scythebill. Farther inland, the northernmost population of the Scaled Woodcreeper, the subspecies *wagleri*, occurs together with the Moustached Woodcreeper in woodland that is severely threatened, although *wagleri* appears to be less sensitive to the degradation and fragmentation of woodland than is the larger species.

Less invasive methods of forest exploitation, such as selective logging, can also have an adverse effect on woodcreepers. The direct removal of trees, and incidental loss occurring when roads are built for transporting timber out of logging concessions, combine to simplify the forest's structure, principally through drastic changes in understorey and mid-storey vegetation. Even when not removed completely, the understorey and mid-storey of selectively logged forest receive an increased amount of solar radiation, leading to micro-climatic changes that disrupt the life-cycle of the arthropods upon which understorey woodcreepers rely. Because the forest canopy is in effect an edge environment, such species as the Lineated Woodcreeper, which forage primarily in the canopy, may be better able to tolerate the degradation and fragmentation that result from selective logging. Besides food scarcity, a loss of suitable nesting sites may explain why fewer species of woodcreeper inhabit second growth and selectively logged forest when compared with primary forest. The preferred nesting sites of woodcreepers, both natural cavities and holes excavated by woodpeckers, are scarcer in the absence of large trees and decaying stumps. Some researchers have suggested that nestboxes will help to maintain woodcreepers in degraded habitats, although this idea has not been tested. It is probably no coincidence that those few dendrocolaptid species that frequent disturbed habitats have been found nesting in a variety of atypical sites, including man-made structures (see Breeding).

Although loss and fragmentation of forest threaten most woodcreepers, a few species are adapted to more open situations. Most notably, the Narrow-billed Woodcreeper, a typical inhabitant of *cerrado*, is gradually extending its range in south-eastern Brazil to occupy sites that were, until recently, blanketed by dense Atlantic Forest. This species quickly exploits resources not available naturally in the wild. It is also one of few woodcreepers that regularly nest in man-made structures, such as bridge supports and cement columns (see Breeding), and it has been observed while foraging on insects attracted to streetlights and refuse barrels. The Streak-headed and Straight-billed Woodcreepers also frequent open habitats, and both seem to have little difficulty in co-existing with humans. One author speculated that the Tawny-winged Woodcreeper was likely to expand its range southwards, because it is less sensitive to habitat disturbance than are the aggressive antbirds that now exclude it at some sites.

Numerous studies have shown that species diversity, not only of woodcreepers but also of most other groups, is maximized when there is a diverse array of continuous and undisturbed habitats in close proximity. Protection of large tracts of undisturbed forest is, therefore, the best way in which to ensure the long-term survival of these birds. Given the inability of most woodcreepers to cross even the narrowest of gaps in forest, a connectivity of forest fragments is also important. Recent work has shown, for example, that narrow forest roads represent enough of a gap to delimit the territories of understorey flocks that some woodcreepers join. As many woodcreepers are sensitive to even minimal changes in habitat quality, their persistence is a natural indicator that can be useful for monitoring ecosystem health throughout Neotropical forests and woodlands.

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On following pages: 3. Plain-winged Woodcreeper (*Dendrocincla turdina*); 4. Tawny-winged Woodcreeper (*Dendrocincla anabatina*); 5. White-chinned Woodcreeper (*Dendrocincla merula*); 6. Ruddy Woodcreeper (*Dendrocincla homochroa*); 7. Long-tailed Woodcreeper (*Deconychura longicauda*); 8. Spot-throated Woodcreeper (*Deconychura stictolaema*); 9. Olivaceous Woodcreeper (*Sittasomus griseicapillus*); 10. Wedge-billed Woodcreeper (*Glyphorhynchus spirurus*).



**Habitat.** Humid forest in lowlands and foothills. Primarily evergreen forest, less frequently gallery, deciduous and lower montane forests, forest on sandy soils, and cloudforest; occasionally mangroves. Amazonian populations occur principally in *terra firme*, floodplain and river-edge forest, less frequently in flooded habitats or swamp-forest. Generally in interior of mature forest, but regularly frequents edge and older second growth; sometimes enters younger second growth, bamboo thickets, and plantations. At one site captured slightly more frequently within unbroken forest than at treefall gaps. Largely a species of understorey and mid-levels, less often subcanopy, but rarely higher; sings from relatively low perches. Mainly below 1300 m in tropical lowlands, but to nearly 2000 m in lower subtropical zone, apparently reaching highest elevations in coastal N Venezuela and N Colombia; few remaining populations seem to occur above 1400 m.

**Food and Feeding.** Diet largely arthropods and other invertebrates, but small vertebrates also regularly taken. Stomach contents from various South American sites primarily beetles and orthopterans, followed by spiders and small vertebrates (especially small lizards) and, in smaller quantities, various Hymenoptera, bugs (Hemiptera) including cicadas (Cicadidae), cockroaches (Blattodea), insect larvae, moths, damselfly (Zygoptera) imagoes, and unidentified neuropterans. Of four dendrocolaptids examined in one study, present species took largest percentage of vertebrates. Comparison of stomach contents with prey flushed by army ants revealed that beetles and orthopterans are taken preferentially, but cockroaches, spiders and ants avoided; prey observed being taken over swarming ants primarily orthopterans, cockroaches and spiders, with lesser numbers of beetles, moths, centipedes (Chilopoda), scorpions, large ants, cicadas, lizards (mostly *Anolis limifrons* at one site), and other items, but data biased by ease of observation. Also seen at dawn to take variety of moths attracted to lights during previous night (but seems to avoid some Geometridae). Prey often quite large for size of bird, regularly 30–40 mm, and sometimes exceeding 100 mm in length; larger items often beaten against trunk, but never held in feet. Although high dietary overlap with other woodcreepers studied (especially *Xiphorhynchus*), behavioural overlap was relatively low. One author suggested that 60–90% of food was taken over ants by members of “*meruloides* group” (with foraging almost exclusively over ants in Trinidad), but members of “*fuliginosa* group” may forage at higher levels and thus less dependent on ants. Despite extensive use of swarms of army ants (largely *Eciton burchelli*, also *Labidus praedator*), often considered a facultative rather than an obligate ant-follower because it regularly forages alone, sometimes with mixed-species flocks, and occasionally in association with monkey troops; unlike most “professional” ant-followers, exploits ants only when they pass through its territory. Use of ant swarms at one site was highest during dry season, lowest during wet season. Usually 1–3 birds encountered at ant swarms, but 4–5 not uncommon, and up to 12 recorded; larger numbers generally found in absence of interspecific competitors (especially in Trinidad). Forages actively over swarms for much of day. Most attacks involve sallies (over 90% in one study), usually to trunks, stems or vines (30–60% in all), less frequently to foliage (c. 25%), the ground (20%) or epiphytes (8%), or aerial pursuits (10–30%); also regularly pecks or gleans prey from surface of trunks (over 20% in another study), less frequently vines or stems, and rarely other substrates; rarely, tosses leaves, hammers on wood, pries off bark, or probes epiphytes or other substrates. Over ants, perches most often on relatively slim (5–15 cm), nearly vertical trunks at periphery of swarm, mostly within 4 m of ground but regularly to 10 m or more. Foraging heights vary depending on presence of competing antbirds, e.g. Ocellated Antbird (*Phaenostictus mcleannani*); in their absence, usually uses perches within 3 m of ground, taking most prey in sallies to ground but when antbirds present, often excluded from perches below 2 m, and relegated to foraging at higher levels. Sallies directed both above and below perch, mostly to targets within 3 m of perch, and almost always within 6 m. Most observations away from ants involve solitary birds, less frequently two, rarely three together (many such groups probably female with young); away from ants, forages higher up (mostly 3–15 m) in mid-levels of forest, usually by sallies to distant foliage or trunks, less often by pecking. Perches crosswise on horizontal branches only occasionally, but still more frequently than do other woodcreepers. Apparently less aggressive than many ant-followers, perhaps reflecting its generally subordinate status; intraspecific aggression common but undistinguished, usually involving supplanting, chases, and occasionally pecking or fighting. Regularly supplants only a few smaller species; conversely, is often supplanted or displaced by *Phaenostictus mcleannani* and by most larger woodcreepers, especially *D. merula* and three *Dendrocolaptes* species (*D. certhia*, *D. sanctithomae*, *D. picumnus*), and, less frequently, by various other species. Often excluded from foraging low over ants, and sometimes forced to forage away from them altogether. Despite regularity of foraging away from army ants, behaviour is typical of “professional” ant-follower: follows same ant colony for extended period of time, but shifts readily from swarm to swarm; monitors inactive colonies, and may return to same one following period of inactivity; homes in on vocalizations of other ant-followers, apparently to locate swarming ants; tracks lines of ants back to swarm. Attends mixed-species flocks in forest understorey only on occasion (6% of the time during radio-tracking work at one site); seems to prefer flocks led by *Thamnomanes* antshrikes. Frequently flashes wings to flush prey, and regularly seen “anting” with small items, most of which are later consumed.

**Breeding.** Nesting season May to early Oct in Costa Rica, Panama and Trinidad, apparently a little earlier in Guyana and somewhat later in N & C Amazonia; in Brazil, nest-building late Aug to early Sept and nest with eggs in early Jan in Belém, nestlings being fed in late Feb in Pará, and fledglings fed in early Aug to mid-Jan and late Mar to late May at various sites in Amazonia; nestlings in late Apr in Colombia, early Jun in Panama and early Sept in French Guiana; dependent young in Jun–Oct in Panama, late Oct in French Guiana and Nov–Dec in Trinidad. Pair-bond brief and rudimentary, with high degree of aggression between mates. Minimal courtship; mates sometimes inspect cavities together or closely chase each other through forest. Nest usually 1–10 m up in cavity of hollow stump, palm branch or bamboo pole, often within forest but sometimes in adjacent clearing, a well-lined cup comprising dead leaves and petioles, fibres, rootlets, plant and seed down, and sometimes feathers, often placed on bed of mosses and often built well below cavity entrance. Clutch 1–3 white eggs, usually 2, average 25.5 × 19.5 mm; parental care exclusively by female, which alone has brood patch, and which appears to be dominant over male; nestlings fed only infrequently, average of 46 minutes (maximum nearly 3 hours) between visits at one nest; most items brought to nest (cicadas, lizards, cockroaches, orthopterans) were quite large, often exceeding bill length of female; nestling period 23–25 days; young usually well grown before brought to ant swarms by female. Estimated mean annual survival nearly 70% in Panama and nearly 80% in Trinidad; three females ringed on Barro Colorado I (Panama) lived at least 8 years, with one recaptured after nearly 11.5 years, and three individuals in Trinidad recaptured 8–10.5 years after ringing.

**Movements.** Apparently resident in most of range; unusual fluctuations in abundance at sites in Costa Rica reported as possibly reflecting local migration, but this not supported by recent observations. Females have virtually exclusive territories that overlap completely with those of males; males may wander away more from their territories, which may overlap. “Unsettled” birds wander extensively but, once settled on a territory, often remain there for many years.

**Status and Conservation.** Not globally threatened. Most common and widespread member of genus; uncommon to fairly common or locally common over most of its range, from Costa Rica to S Venezuela, Ecuador and most of Amazonia; apparently more common in Trinidad than elsewhere. Geographically isolated race *taunayi* fairly common in what little forest remains within its limited range in

NE Brazil. Much less common at upper elevations (rare above 1400 m), and scarce at N edge of range and in marginal habitats of dry lowlands of NW Costa Rica. Has seemingly disappeared from former range in Cauca Valley (Colombia). Population on Barro Colorado I (Panama) estimated in one study at 100 individuals, with the species believed to occupy 95% of island’s area. Densities on Barro Colorado I were 6–7 birds/100 ha (2–8 “settled” females, 1–8 “settled” males, and additional floaters), with females having home ranges of c. 36 ha; estimated densities in floodplain-forest in SE Peru a little higher, at 8 birds/100 ha (with territories estimated at 13–16 ha), and those in nearby late-successional growth higher still, at 10–12 birds/100 ha; densities in *terra firme* forest in both SE Peru and French Guiana much lower, only 1–2–6 birds/100 ha. Considered highly sensitive to forest fragmentation and other forms of human disturbance; appears, however, to be less sensitive than are “professional” ant-followers in that its numbers may remain stable, at least over short term, in both selectively logged forest and all but the smallest forest fragments; at some sites may in fact be more common in fragments and second growth than in undisturbed forest. Despite its apparent ability to survive even in fragmented forest, so little habitat remains in isolated range of race *taunayi* that this taxon should probably be monitored in the future. Populations experience lower seasonal fluctuations than do those of some professional ant-followers, which may explain its persistence in fragments. Species is regarded as an indicator of tropical lowland evergreen forest along Caribbean slope of Central America, and in Chocó lowlands, N South America and both N & S Amazonia.

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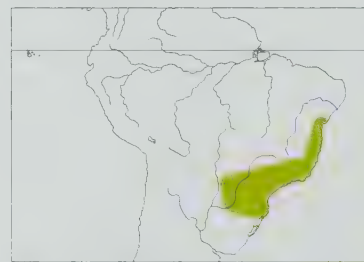
### 3. Plain-winged Woodcreeper

#### *Dendrocincla turdina*

**French:** Grimpard grive **German:** Einfarb-Baumsteiger **Spanish:** Trepatroncos Turdino  
**Other common names:** Thrush-like Woodcreeper, Plain Woodcreeper

**Taxonomy.** *Dendrocolaptes turdinus* M. H. K. Lichtenstein, 1820, no locality = Bahia, Brazil. Forms a superspecies with *D. fuliginosa*, and often regarded as conspecific. Race *atirostris* of latter considered by some authors to be better placed with present species on basis of vocalizations and presence of crown streaking. Birds from S of range named as race *enalincia*, but characters on which description based are obscured by marked individual variation in both size and plumage coloration throughout species’ range. Monotypic.

**Distribution.** E & SE Brazil (from E Bahia S along coast to N Rio Grande do Sul, extending inland to S Goiás, W Paraná and W Santa Catarina) and E & C Paraguay and NE Argentina (Misiones and NE Corrientes).



**Descriptive notes.** 19–21 cm; 31–45 g (Brazil), female 29 g (Paraguay). Medium-sized woodcreeper with short, straight bill. Plumage uniformly olive-brown, apart from faint buff shaft streaks on crown, pale buff throat, and slightly more rufescent rectrices, uppertail-coverts and distal remiges; wing-linings ochraceous buff; iris brown; bill grey to blackish, with lower mandible often paler; legs and feet brown to grey. Differs from *D. fuliginosa* in having brown wings largely colorous with body, tail not so rufescent. Female like male in plumage, but marked variation in size suggests sexual dimorphism. Juvenile undescribed. **Voice.** Apparent song a monotonous series lasting 1 minute or more, comprising “tik”, “kik” or “keek” notes at same pitch, c. 3 notes per second, with amplitude varying seemingly at random; various calls described as “cha-a-a-a” rattle, “chahh” hiss, and “stau”. Both supposed song and “stau” call different from comparable vocalizations of *D. fuliginosa*.

**Habitat.** Primarily lowland humid forest, less frequently cloudforest of lower montane zones; also, follows gallery forest well into *cerrado* region. Occupies both interior of mature forest and older second growth, sometimes edges. Mainly frequents forest understorey and mid-levels. Largely restricted to tropical lowlands, with lower numbers in subtropical zone of foothills, to 1250 m.

**Food and Feeding.** Mainly insectivorous. Coleoptera, Hemiptera, and many unidentified items found in one stomach from Brazil (Espírito Santo); small beetles and ants found in another study. Forages chiefly in association with army-ant swarms (generally *Eciton burchelli*, occasionally *Labidus praedator*), using perches at low to medium heights. Prefers near-vertical perches, c. 15 cm in diameter and 2–3 m above ground when over ants; less often on smaller trunks down to 0.3 m or up to 9 m; rarely uses trunks with diameter more than 25 cm. Occasionally gleans prey from surfaces when over ants, but prefers to sally to ground, foliage, trunks or other substrates; sometimes captures prey in mid-air. Moderately aggressive towards same species and others when over ants, occasionally supplanting smaller species; is itself supplanted by larger ones, e.g. *Dendrocolaptes platyrostris*. Also a regular attendant in mixed-species flocks, especially those led by Cinerous Antshrike (*Thamnomanes caesioides*) in N part of range. Generalized foraging habits may be an adaptation for survival near S limit of army-ant occurrence, where inactivity of ants during cold weather sometimes forces it to forage independently of them.

**Breeding.** In Brazil, nest with eggs in mid-Nov in São Paulo (where birds with limited moult and worn flight-feathers in Jul), singing in Nov–Jan in S Bahia and N Espírito Santo, and heard (presumably songs) in early Mar in N Rio Grande do Sul; birds in breeding condition in Nov in



Paraguay. Nest in cavity in tree trunk, lined with leaves and stems; one in São Paulo consisted of lining of wood chips located within cavity 1.5 m up in trunk. Clutch 2 white eggs, average  $26 \times 19$  mm; incubating bird regularly left to take breaks away from nest; young apparently raised by a single parent, presumably female. Several ringed birds recaptured after 2 years, and one after nearly 5 years.

**Movements.** Resident throughout most of range, including W edge, but the few records from Rio Grande do Sul all in Oct-Mar, so that retreat from S fringe of range during austral winter possible. **Status and Conservation.** Not globally threatened. Despite obvious declines following disappearance of vast expanses of its Atlantic Forest habitat, remains fairly common to common in extensive tracts that still exist in Brazilian part of range. Probably most severely depleted in N part of range, where little forest remains, but even there is relatively common in larger tracts of native forest, e.g. Sooretama Biological Reserve and adjacent Linhares Natural Reserve. Rare at fringes of range in Paraguay and N Rio Grande do Sul; uncommon in NE Argentina. Occurs both in primary forest and in older second growth, and seems to be only moderately affected by human disturbance; common at some sites in both selectively logged and second-growth forest. The species persisted, in diminished numbers, for at least several years in a small fragment of forest from which army ants had disappeared, but a study at same site 15 years later failed to find it.

**Bibliography.** Aleixo & Galetti (1997), Aleixo & Viellard (1995), Anciães & Marini (2000b), dos Anjos *et al.* (1997), Belton (1973, 1984), Berla (1944), Brooke (1983), Cory & Hellmayr (1925), Davis (1945, 1946), Esteban (1948), Hayes (1995), Hellmayr (1908), Ihering (1898), Lopes *et al.* (1980), Marini *et al.* (1996), Narosky & Yzurieta (1993), Oniki (1981), de la Peña (1988), Pinto (1932, 1935, 1947, 1978), Reinert *et al.* (1996), Ridgely & Tudor (1994), do Rosário (1996), Schubert *et al.* (1965), Scott & Brooke (1985), da Silva (1996), Storer (1989), Stotz (1993), Stotz *et al.* (1996), Willis (1979c, 1982d, 1983c).

## 4. Tawny-winged Woodcreeper

### *Dendrocincla anabatina*

**French:** Grimpar à ailes rousses

**Spanish:** Trepatroncos Sepia

**German:** Lohschwingen-Baumsteiger

**Taxonomy.** *Dendrocincla anabatina* P. L. Sclater, 1859, Omoa, Cortés, Honduras.

Has been suggested as being sister-species of *D. tyrannina*. Race *saturata* merged with nominate by some authors, but darker, more olive upperparts and allopatric distribution support recognition as separate race. Three subspecies recognized.

#### **Subspecies and Distribution.**

*D. a. anabatina* P. L. Sclater, 1859 - Caribbean slope from S Mexico (SE Veracruz and N Oaxaca E to S Quintana Roo) S & E to NE Nicaragua.

*D. a. typhla* Oberholser, 1904 - Yucatán Peninsula (E Yucatán, N Campeche, N Quintana Roo).

*D. a. saturata* Carriker, 1910 - Pacific slope of Costa Rica (S from Gulf of Nicoya) and W Panama (W Chiriqui).



**Descriptive notes.** 17-19 cm; male 34-42 g, female 29-39 g (*anabatina*). Medium-sized woodcreeper with straight bill, relatively short tail, slightly crested appearance (shaggy nape). Nominant race has brown head with buffy supercilium, dark olive-brown crown, nape and back; cinnamon-rufous to rufous-chestnut uppertail-coverts and tail; wing-coverts like back, but remiges tawny with dusky tips, forming conspicuous panel in wing; throat pale buff, underparts light olive-brown, blending towards cinnamon on belly and undertail-coverts; iris yellowish-brown to grey, orbital skin grey; bill slaty grey, dark brown or black, lower mandible grey or bluish; legs and feet dark blue-grey to blackish. Sexes similar. Juvenile is like adult, but throat duller, supercilium broader and more diffuse, eyes sometimes white. Race *typhla* is more pallid than nominate, especially below; *saturata* is darker, more olivaceous, above, with duller centres of remiges. **Voice.** Song an extended rattle lasting to 70-80 seconds that sometimes stutters or changes cadence or quality, and occasionally ends in doubled "cheeu" "cheeu", resembles song of *D. fuliginosa*; calls a plaintive "squirrel", "deyeew", "cheeuw" and "tchee-u".

**Habitat.** Humid evergreen forest; also mangroves and, on Yucatán Peninsula, semi-deciduous forest. Primarily mature forest and older second growth, but occasionally in edge situations and semi-open areas. Frequents undergrowth, usually quite close to ground. Mainly lowlands to 500 m, but ascends foothills to 1200 m in Mexico, occasionally 1500 m in Costa Rica.

**Food and Feeding.** Largely insectivorous, but small vertebrates (especially lizards) and some vegetable matter also taken. Prey taken when feeding over army ants were earwigs (Dermaptera), grasshoppers (Acrididae), moths, spiders, and ants other than army ants. Stomachs contained principally spiders, beetles, wasps, orthopterans, caterpillars, various types of ant, hemipteran bugs, and small quantities of other types of prey, including scorpions, pseudoscorpions, snails; seeds and pulp from both *Ficus* and *Psychotria* found in some stomachs. An obligate ant-follower, regularly checks inactive bivouacs, and routinely forages at more than one swarm on same day. Forages low over ant swarms (both *Eciton burchelli* and *Labidus praedator*), usually perching 0-3 m above ground on near-vertical trunks and branches, often those of small diameter. Regularly seen in same flocks as *D. homochroa*. Captures prey chiefly by short sallies to ground or low foliage, less frequently to other substrates and to open air. Apparently excluded from some sites by larger, more aggressive Ocellated Antbird (*Phaenostictus mcleannani*). Usually seen singly or in twos, and often highly aggressive towards its own and other species. Foraging behaviour away from army ants poorly known, but apparently a regular follower of Squirrel Monkey (*Saimiri oerstedii*) troops in S Costa Rica. Both "anting" behaviour and "wing-flashing" have been noted.

**Breeding.** Newly hatched young in late May and dependent juvenile in mid-Jul in Belize; nest preparation beginning late Feb, eggs laid early Mar to Jun, hatching from May and nestlings to late Jul in Costa Rica; specimens in breeding condition late Feb to May in S Mexico, Belize, Guatemala and Honduras; male with small testes and moulting wing and tail in mid-Jul in Yucatán Peninsula; apparently one brood per season. Seen in pairs only in Nov-Jan in Costa Rica, suggesting short-term pair-bond. Nest built by one adult, presumably female, from mosses, fibrous rootlets, strips of papery bark, and lichens, generally within low (1.5-6 m up) cavity of bamboo pole, stump or root cluster; often uses natural cavity but occasionally old hole of woodpecker (Picidae). Clutch 2 white eggs; incubation and care of young apparently by only one parent, presumably female; incubates for 60-70% of day, in sessions of 15-90 minutes, with breaks of 10-40 minutes; incubation period 20-21 days; chick hatches with eyes closed, pink skin, yellow mouth-linings, sparse grey down; food items brought to nests in Costa Rica mostly insects, small at first, larger as young grew, numerous small lizards representing bulk of nestling diet in mass,

though not number; nestling period 24 days. Unusual record of one bird rearing a *Lepidocolaptes souleyetii* from egg to fledging after usurping nest of its parents. Nest success in Costa Rica 57% overall, but only 33% for nests found before last egg laid.

**Movements.** Resident; individuals recaptured at same site in Belize both in same and in subsequent seasons, reflecting sedentary nature. Five individuals captured and later released at a nearby site in Mexico all returned to their original territories.

**Status and Conservation.** Not globally threatened. Fairly common to common within humid forest over most of range from Mexico S to Costa Rica, but rare in deciduous forest in Yucatán Peninsula; less common at upper elevations, and uncommon to rare at margins of range in Oaxaca (Mexico), NE Nicaragua and W Panama. Although ant-following species in general are relatively intolerant of forest fragmentation, and present species in particular considered by some authors to be sensitive to human disturbance, individuals captured in overgrown fields in Belize and in Yucatán Peninsula suggest some tolerance of disturbance. It has even been speculated that this species could expand its range in S because it is less sensitive to disturbance than are aggressive thamnophilid antbirds that now exclude it from some sites. A study in S Mexico estimated size of home range at 2 ha. Considered an indicator of tropical lowland evergreen forest of Caribbean slope.

**Bibliography.** Anon. (1998a), Binford (1989), Blake (1950a, 1953), Boinski & Scott (1988), Carriker (1910), Coates-Estrada & Estrada (1989), Cole (1906), Cory & Hellmayr (1925), Davis (1972), Deignan (1936a), Edwards (1972), Graber & Graber (1959), Griseom (1932a), Howell & Webb (1995a), Huber (1932), Klaas (1968), Kricher & Davis (1998), Land (1963, 1970), Miller *et al.* (1957), Monroe (1968), Orians (1969), Paynter (1955, 1957), Peters (1929), Peterson & Chalif (1973), Puebla (2001), Ramos & Rappole (1994), Rappole & Warner (1980), Richmond (1893), Ridgely & Gwynne (1989), Ridgway (1911), Russell (1964), Salvin (1870), Skutch (1945a, 1962, 1966, 1969c), Slud (1964), Smith (1966), Smith & Paynter (1963), Stiles (1983b, 1985), Stiles & Skutch (1989), Storer (1961), Stotz *et al.* (1996), Sutton (1951a), Swartz (2001), Traylor (1941), Van Tyne (1935), Wetmore (1943, 1972), Willis (1960a, 1983c), Willis & Oniki (1988c).

## 5. White-chinned Woodcreeper

### *Dendrocincla merula*

**French:** Grimpar à menton blanc

**Spanish:** Trepatroncos Barbiblanco

**German:** Weißkinn-Baumsteiger

**Taxonomy.** *Dendrocolaptes Merula* M. H. K. Lichtenstein, 1820, "Cayenne".

Formerly included the taxon *meruloides*, now considered to be closer to *D. fuliginosa*. Races N of R Amazon and E of R Negro (nominate, *obidensis*) possibly constitute a separate species based on differences in vocalizations, size and iris colour; more work needed. Seven subspecies recognized.

#### **Subspecies and Distribution.**

*D. m. bartletti* Chubb, 1919 - W Amazonia and upper R Orinoco drainage, both N & S of R Solimões, from C Venezuela and C Colombia, S to E Ecuador, E Peru, N Bolivia and W Amazonian Brazil (E to R Negro and R Madeira).

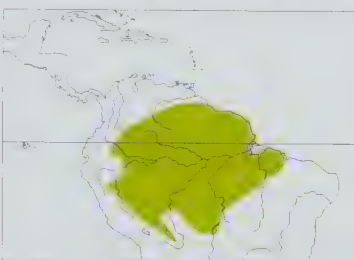
*D. m. merula* (M. H. K. Lichtenstein, 1820) - the Guianas and adjacent N Brazil (E of R Branco in Roraima and N Pará).

*D. m. obidensis* Todd, 1948 - Amazonian Brazil, along N bank of Amazon, from R Negro E to Amapá. *D. m. remota* Todd, 1925 - E Amazonian Bolivia (N Santa Cruz), probably also adjacent Brazil (NW edge of Pantanal).

*D. m. olivascens* J. T. Zimmer, 1934 - S Amazonian Brazil, S of Amazon, from R Madeira E to R Tapajós.

*D. m. castanoptera* Ridgway, 1888 - S Amazonian Brazil, S of Amazon, from R Tapajós E to R Tocantins.

*D. m. badia* J. T. Zimmer, 1934 - SE Amazonian Brazil, S of Amazon, from R Tocantins E to Maranhão.



**Descriptive notes.** 16-21 cm; male 28-54 g, female 29-54 g (much of Amazonia), male average 57 g, female 49-5 g (Manaus). Geographic variation in size significant; birds from SE Peru slightly larger than others, and birds along N bank of Amazon R (E of R Negro) substantially so. Medium-sized woodcreeper with relatively short, straight bill, uniform-looking plumage. Nominant race is almost entirely dark reddish-brown, with wing-coverts, remiges and tail slightly more rufescent; tips of inner webs of outer primaries dark brown; narrow stripe of white to yellowish from chin to lower throat sharply defined (often difficult

to see in field); underparts dark olive-brown, blending to dark rufous on undertail-coverts; underwing-coverts pale chestnut; iris reddish-brown to brown; bill brownish to black, lower mandible variably black to brown, grey, greenish, even pale yellowish to nearly white, sometimes with black tip; legs and feet bluish, olive, grey or brownish. Differs from *D. fuliginosa* mainly in lacking facial striping, instead appearing plain-faced apart from pale throat. Sexes similar, female may average slightly smaller. Juvenile has less contrasting throat dirty white or dingy buff, generally darker underparts, often entirely dark bill apart from obvious gape-flanges. Race *obidensis* similar to nominate in coloration, but significantly larger; remaining subspecies all generally paler, both above and below, with *remota* the palest and *olivascens* more olive overall; both *castanoptera* and *badia* again more rufescent, especially the latter, which also has a larger, whiter throat-stripe; *bartletti* differs by having dusky tips to primaries and outer secondaries; colour and extent of pale throat, and pattern of the primaries vary geographically; also eye colour, grey or blue-grey to bluish in most of range, but reddish-brown to brown in races *merula* and *obidensis*; probably more complex than this, because both brown and grey eyes noted in Roraima and Orinoco region, and one bird with brown eyes collected in northern Mato Grosso. **Voice.** Calls often heard near ant swarms, but songs poorly known; both vary geographically. Most frequent vocalization a multi-note chatter call, often given at ant swarms, usually 2-4 notes, described as "dit-it-it-it" or "tat-at-at" over most of range, but piercing "deet-eet-ee" in N Amazonia E of R Negro. Song in Manaus area (Brazil) a series of 6-9 loud, whistled notes described as "kew, kew, kew, kew, kew", but over most of range apparently lower in frequency and described as "we, wi, di, dit", or "wi-wid-wid-di" in SE Colombia, and in some places an ascending whistle of 2-3 notes. Other calls include sharp "spee" notes in Manaus area, growling "chauhhh", long rattle at 4-5 notes per second (i.e. slower than *D. fuliginosa*), quiet "wi-i-i-i-ih" rattle, also "tsiriRIT" possibly as warning call.

**Habitat.** Primarily humid forest, both *terra firme* and on floodplains; also forests on sandy soils in Colombia and at some sites in Brazil, and occasionally gallery, riverine or flooded forests. Prefers open understorey of interior of mature forest, less frequently subcanopy, older second growth and edges; occasionally in denser vegetation around streams, young second growth, bamboo thickets, or fringes of *várzea* forest. Largely restricted to forest undergrowth, using lower strata than *D. fuliginosa* occurring at same sites. Exclusively lowlands, generally below 300 m, occasionally to 500-600 m.



**Food and Feeding.** Diet consists largely of arthropods, but small vertebrates occasionally taken. Stomach contents from one site in N Bolivia mostly Hymenoptera and beetles (each comprising 33% of diet), with fewer spiders (19%) and Orthoptera (14%); other items rarely taken. Stomachs from other sites in N Bolivia and from E Peru contained primarily orthopterans, spiders and ants, with lesser numbers of beetles, cockroaches (Blattodea), bugs, vertebrates; those from Amazonian Brazil contained Hemiptera, Coleoptera, Blattaria, Isoptera, and even Odonata. Comparison of stomach contents with prey flushed by army ants revealed orthopterans are taken preferentially, with cockroaches and, especially, Hymenoptera avoided. May select prey of small to moderate size, possibly larger than taken by some other dendrocolaptids; 21% of items smaller than 7 mm, 65% were 8–16 mm, and 14% over 16 mm. Substantial overlap with other woodcreepers and several ant-following antbirds (Thamnophilidae) in both type and size of prey taken; however, this and other ant-following dendrocolaptids may take smaller items than antbirds, in relation to bill size, because they have more difficulty in removing appendages before eating prey. Prey observed taken over swarming army ants include, in decreasing order of abundance, cockroaches, spiders, ant larvae, centipedes (Chilopoda), scorpions, crickets (Gryllidae), grasshoppers (Acrididae); beetles, moths, skippers (Hesperiidae), whipscorpions (Amblypygi) and lizards all taken only on occasion. An obligate ant-follower, forages mostly over *Eciton burchelli*, also regularly over *Labidus praedator*; may visit multiple ant swarms on same day, and monitors inactive colonies; radio-tracked female with nestling routinely travelled over 300 m between ant swarms, suggesting that movements of over 500 m from nest to foraging sites perhaps not uncommon. Typically, 1–2 individuals present at swarms in Brazilian Amazon, but up to 7–8 seen at swarms in SE Peru; larger groups probably involve wandering immatures, aggregates of solitary birds, or females with young. Perches lower and often on slimmer trunks than do other woodcreepers, rarely more than 3 m above ground, often using trunks with diameter less than 15 cm. Foraging methods vary depending on presence of large antbirds such as Black-spotted Bare-eye (*Phlegopsis nigromaculata*). In Brazil, nearly 90% of all foraging is within 1 m of ground in absence of *Phlegopsis* near Manaus, where regularly remains relatively motionless on slimmer and more angled perches, but near Belém, where *Phlegopsis* present, only 58% of foraging below 1 m, birds move about more over ants, and they forage mostly from larger (6–15 cm diameter), near-vertical trunks. Suggested correlation between body size of these woodcreepers and presence of large antbirds not supported by small size of birds in Roraima, where large antbirds are absent. Rarely hitches far up trunks, instead flying between perches. Most prey taken by rapid sallies to ground, followed by return to perch; sallies occasionally to foliage, rarely to other substrates. Seldom picks or gleans prey from trunks or foliage. Has been observed to perform “anting”, but rarely flicks wings to flush prey. Highly aggressive towards both conspecifics and other species over ants, usually supplanting smaller species and being supplanted by larger ones; dominant over *D. fuliginosa*, often excluding it from foraging low over swarms, or forcing it to forage away from them. Rarely seen away from ants; at such times moves rapidly and silently through understorey, apparently in search of new swarms. Rarely follows mixed-species flocks away from ants. Radio-tracked birds observed to forage also in association with herds of peccaries (*Tayassu pecari*), which flush prey much as do swarming ants; one individual even seen perched atop hindquarters of a peccary.

**Breeding.** Little known. Birds in breeding condition in Feb–May in NW Brazil, E Colombia and S Venezuela, in late Jun in NE Amazonian Brazil (Amapá) and in mid-Aug in S Amazonian Brazil (Mato Grosso), and in non-breeding condition in early Oct in NE Amazonia; fledged juveniles of *obidensis* mid-Jul to mid-Oct, but juvenile specimens of other races mostly May–Jul; in W Amazonia, juveniles appear at ant swarms in Dec–Jan (SE Peru) and adults in moult in Oct–Apr; birds moulting in Apr in upper R Orinoco region and in worn plumage in Sept in French Guiana, suggest breeding during dry season; more work needed to confirm geographical component to variation in season. Pair-bond apparently brief; male and female associate irregularly, and for only c. 1 month, but may investigate nesting cavities together. Nest undescribed, apparently in cavity. No details on clutch size and eggs; DNA analysis revealed that female alone raises young and associates with them after fledging; male lacks brood patch, and not observed to attend young; fledglings remain with parent for 3 months (until late Jan or early Feb near Manaus), but often stay in area longer (two still present in following May); one, rarely two, dependent young encountered with single parent. Nest predation suggested as less than 80% over a breeding season of 3–6 months. Adult survival relatively high, with average annual survival 71% over 3-year period (10 of 26 birds resighted 3 years after initial capture); one bird recaptured at another site after 4 years.

**Movements.** Resident. Some movement within sites; even “settled” birds move over areas 2–3 km across; the sexes have overlapping territories.

**Status and Conservation.** Not globally threatened. Locally common, but apparently uncommon over much of range. Abundance may be depressed through competition over ants by larger thamnophilids; densities possibly lower in S & W Amazonia where *Phlegopsis* and *Rhegmatorhina* present, but fairly common to common in absence of those species near Manaus and at sites in both Rondônia and Roraima; uncommon in Amapá and Guyana in absence of large antbirds, but rare at Belém in their presence. Only one record from Surinam, in 19th century; uncommon in French Guiana and N Bolivia; scarce and possibly local in Venezuela; fairly common to common in W Amazonian Brazil and adjacent Peru; uncommon in NW Mato Grosso, but quite rare at well-worked Alta Floresta (NC Mato Grosso); rare in NE Ecuador. Density at site in floodplain-forest in SE Peru 16–22 birds/100 ha, with average home range over 64 ha; at Manaus 2–5 birds/100 ha considered an annual low, with 3–6 birds/100 ha representing peak (post-breeding) density. Like other obligate ant-followers, highly sensitive to fragmentation and disturbance of mature forest, all but disappearing from fragments up to 100 ha in size, and apparently requiring 200–400 ha to survive; birds experimentally introduced into 10-ha fragments lacking army ants left within 48 hours, many sooner, and capture rates dropped effectively to zero in fragments smaller than 10 ha. Gaps shown not to be an insurmountable barrier, despite significantly reducing bird movement; marked birds crossed 75–100 m of open space between fragments and continuous forest (not only to abandon fragments, but also occasionally to visit them when scouting for swarming ants). Trapped while moving through second growth dominated by both *Vismia* and *Cecropia* in approximately equal numbers, and apparently able to use regenerating forest to move between patches of better habitat. Often abandons ant-swarms that move into second-growth, and always those that enter clearings. Even relatively low levels of selective logging may have significant impact on this and other dendrocolaptids. An indicator species for tropical lowland evergreen forest in both N & S Amazonia.

**Bibliography.** Bates & Parker (1998), Bates *et al.* (1989), Bertelsh & Hartert (1902), Bierregaard (1988), Bierregaard & Lovejoy (1989), Bierregaard & Stouffer (1997), Borges & Stouffer (1999), Borges *et al.* (2001), Brace *et al.* (1997), Chapman & Rosenberg (1991), Chesser (1995), Chubb (1921), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1925), Dale *et al.* (1994), Dick *et al.* (1984), Foster *et al.* (1994), Friedmann (1948), Graves & Zusi (1990), Gyldestolpe (1951), Hafler (1988), Harper (1989), Haverschmidt & Mees (1994), Hellmayr (1905, 1907, 1910), Hilty (2003a), Hilty & Brown (1986), Johns (1991), Karr, Robinson *et al.* (1990), LeCroy & Sloss (2000), Lloyd & Marin (2000), Lovejoy *et al.* (1984), Mason (1996), Meyer de Schauensee (1966), Meyer de Schauensee & Phelps (1978), Novaes (1974, 1976, 1980), Novaes & Lima (1990), O’Neill & Pearson (1974), Olivares (1964b), Oniki (1972a, 1974), Oniki & Willis (1972, 1982), Parker & Bailey (1991), Parker *et al.* (1982), Penard & Penard (1908–1910), Peres & Whittaker (1991), Phelps & Phelps (1963), Pinto (1978), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robbins *et al.* (1991), Rocha & Peñaranda (1992), Schubar *et al.* (1965), Selater (1889),

Servat (1996), Sick (1993), da Silva & Oren (1990), da Silva *et al.* (1990), Snethlage (1914), Snyder (1966), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Stouffer & Bierregaard (1995), Taczanowski (1884), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1990, 1992), Thiollay & Jullien (1998), Tostain *et al.* (1992), Willard *et al.* (1991), Willis (1976, 1977, 1979c, 1982c, 1983c, 1986), Willis & Oniki (1978, 1988c, 1992, 1995), Willson-Hillman (2002a), Zimmer (1934b).

## 6. Ruddy Woodcreeper

### *Dendrocicla homochroa*

**French:** Grimparr roux **German:** Rostkappen-Baumsteiger **Spanish:** Trepatroncos Rojizo

**Taxonomy.** *Dendromanes homochrous* P. L. Selater, 1859, Teotalcingo, Oaxaca, Mexico.

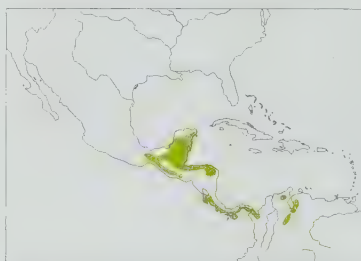
Race *acedesta* merged with nominate by some authors, on grounds that size variation is clinal. Birds on Caribbean slope in Costa Rica apparently belong to former race, but substantiation required. Four subspecies recognized.

#### **Subspecies and Distribution.**

*D. h. homochroa* (P. L. Selater, 1859) - Caribbean and Pacific slopes of S Mexico (N & NE Oaxaca, Yucatán Peninsula), S & E to Belize, Guatemala, El Salvador (one site), Honduras and NE Nicaragua. *D. h. acedesta* Oberholser, 1904 - Pacific slope from SW Nicaragua S to W Panama; also on Caribbean slope in N two-thirds of Costa Rica.

*D. h. ruficeps* P. L. Selater & Salvin, 1868 - C & E Panama (E from E Chiriqui) and locally in adjacent NW Colombia (N Chocó).

*D. h. meridionalis* Phelps, Sr. & Phelps, Jr., 1953 - N Colombia and NW Venezuela (lower slopes of Perijá Mts and Cordillera de Mérida).



**Descriptive notes.** 17.5–20.5 cm; male 34–43 g, female 27–39 g (Yucatán S to Guatemala), male average 45 g, female 37 g (Panama). Medium-sized woodcreeper with straight bill, short tail, large head; hammer-headed appearance imparted by conspicuously ruffled nape. Rather uniformly dark rufous to chestnut-brown above, brighter and more rufescent on crown, no obvious facial markings apart from greyish lores and eyering; wings, uppertail-coverts and tail rufous-chestnut, primary tips dusky; throat paler, cinnamon-buff to tawny-ochraceous, underparts rufous-brown, becoming paler on belly, more rufous on undertail-coverts; underwing-coverts light rufous; iris reddish-brown to light chestnut-brown; bill usually dusky brownish, greyish or dull flesh-coloured with blackish tip, sometimes all black; feet pale greyish to greyish-brown. Sexes similar. Juvenile is virtually identical to adult, but throat and belly slightly more rufescent. Race *acedesta* is on average larger, darker and more olive than nominate, throat and belly less conspicuously paler; *ruficeps* is slightly larger than previous, with bill heavier, overall coloration slightly paler; *meridionalis* has crown darker chestnut, back darker and more olive-brown than other races. **VOICE.** Quiet and rarely heard. Song a 2–5–4 second rattle, churring or slightly slurred, that slows or descends towards end; similar in quality to that of congeners, especially *D. anabatina*, but shorter, and notes delivered more rapidly. Calls include churring, a squeaky “quink” or “peach”, and a nasal, descending “deeeeah” or “tee tee eu” often quavering at end.

**Habitat.** Humid and deciduous lowland forest; evergreen cloudforest into upper tropical and, occasionally, lower subtropical zones; semitropical-deciduous forest and gallery forest in drier regions; less commonly “broken pine ridge” areas in Belize. Occasionally moves from mature forests and older second growth into nearby edges, semi-open areas, and trees within clearings. May to a degree be specialized on foraging on mossy trunks in upland forest. Occurs in both lowlands and foothills from sea-level to 1800 m, but generally most common in foothills between 300 m and 1200 m. Commonest below 1000 m in Mexico, Belize and Guatemala, but occurs at 1300–1550 m at N limit of range (Oaxaca, in Mexico); lowlands in Honduras, Costa Rica and Panama, but apparently most common in these countries on lower slopes of foothills (300–900 m, occasionally to 1350–1800 m); one of only two obligate ant-followers above 1200 m in W Panama. Restricted to foothills and hill country in Colombia, where poorly known; largely in foothills in Venezuela, where mostly below 450 m but occasionally to 1800 m (at least historically).

**Food and Feeding.** Diet largely arthropods. Stomach contents reveal prey similar to that seen taken over swarming army ants. Important prey include spiders, cockroaches (Blattodea), grasshoppers (Acrididae), beetles and their larvae, and caterpillars; various types of ants and wasps also taken in small quantities. High degree of dietary overlap with *D. anabatina*, but takes fewer spiders. Rarely seen away from army-ant swarms, where usually present singly or in twos, rarely threes. Forages over both *Eciton burchelli* and *Labidus praedator*, more often the former. Typically, forages from perches 2–10 m above ground, both on larger trunks and at higher levels than *D. anabatina*, and often present in same flocks; prefers larger, more mossy trunks than congener. May descend to perches within 1 m of ground in semi-open situations. Perches on near-vertical trunks in undergrowth, and either pecks prey from mossy trunks or sallies to ground, foliage or other substrates; pecking more common than in any other member of genus. Generally sallies downwards to targets within 1 m, less frequently in upward direction or to distances to 5–6 m. Sometimes forages among epiphytic mosses and bryophytes. Apparently dominant over *D. fuliginosa*; subordinate to and less pugnacious than *D. anabatina*. Often quiet and inconspicuous. Regularly flicks wings, but wing-flashing not recorded. So rarely encountered away from ant swarms that virtually nothing is known of behaviour at such times; has been seen moving singly through lower levels of open forest searching surfaces of trunks and limbs, and occasionally joins mixed-species flocks.

**Breeding.** Season Apr–Jun in Costa Rica; nests with eggs in Jun in Belize; birds in breeding condition in late May to mid-Aug in Yucatán Peninsula, Mar–Jun in Guatemala, Mar in Panama and Apr–May in Colombia. Nest of bark and fibres, built in cavity of stump, tree or palm trunk 0.6–5 m above ground; deep cavities first filled with moss or leaves. Clutch 2–3 white eggs.

**Movements.** Largely resident. Reports of vagrants at La Selva Biological Station, in Costa Rica, and Barro Colorado I, in Panama, suggest wandering from higher elevations; may likewise be nomadic in dry NW part of Costa Rica.

**Status and Conservation.** Not globally threatened. Generally uncommon to fairly common throughout N part of range (Mexico S to E & SW Costa Rica), but less common and more local in El Salvador (common at one site), NW Costa Rica, Panama, and South America; in S portion of range, apparently more common in N parts and in foothills of S Central America, and possibly more common in Venezuela than in Colombia, but believed to be declining due to loss of forest. Reports of presence on islands off Yucatán Peninsula (e.g. Cozumel I) probably the result of mislabelled specimens. Present only in mature forest at sites in Belize and Yucatán Peninsula, where *D. anabatina* was found in both scrub and mid-successional growth; occasionally followed ant swarms from



forest into adjacent shade coffee plantations in W Panama, but never wandered far from true forest and never entered coffee grown in sunlight. Appears to be highly sensitive to loss and fragmentation of mature forest; even within suitable habitat numbers seem to fluctuate substantially, this possibly contributing to local extinction at marginal sites. That birds began to return to unburned, regenerating forest only 18 months after hurricane "Gilbert" hit Yucatán Peninsula, however, suggests that some populations can exist in relatively degraded forest. Considered an indicator species for tropical lowland evergreen forest in N South America.

**Bibliography.** Anon. (1998a), Binford (1989), Blake (1953, 1958), Carriker (1910), Cory & Hellmayr (1925), Edwards (1972), Griscom (1926), Hartman (1961), Hilty (2003a), Hilty & Brown (1986), Howell & Webb (1995a), Karr (1971b, 1982a, 1982b), Karr, Robinson *et al.* (1990), Klaas (1968), Kricher & Davis (1998), Land (1963, 1970), Lynch (1991), Meyer de Schauensee (1964, 1966), Meyer de Schauensee & Phelps (1978), Miller *et al.* (1957), Monroe (1968), Nadkarni & Matelson (1989), Paynter (1955), Peterson & Chalif (1973), Phelps (1944), Phelps & Phelps (1953b, 1963), Puebla (2001), Puebla *et al.* (2002), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Roberts *et al.* (2000), Rodner *et al.* (2000), Russell (1964), Salvin (1870), Slud (1964, 1980), Smith (1966), Smith & Paynter (1963), Stiles (1983b, 1985), Stiles & Skutch (1989), Storer (1961), Stotz *et al.* (1996), Sturgis (1928), Sutton (1951a), Thurber *et al.* (1987), Underwood (1896), Van Tyne (1935), Wetmore (1944, 1972), Willis (1960a, 1983c, 1986), Willis & Oniki (1988c).

## Genus *DECONYCHURA* Cherrie, 1891

### 7. Long-tailed Woodcreeper

#### *Deconychura longicauda*

**French:** Grimpur à longue queue

**Spanish:** Trepatroncos Colilargo

**German:** Langschwanz-Baumsteiger

**Taxonomy.** *Dendrocincla longicauda* Pelzelin, 1868. Borba, Marabitanas, Barra do Rio Negro = Manaus, Brazil.

Races *typica*, *darienensis* and *minor* sometimes considered to constitute a separate species, with small size and vocal characters suggesting possibly closer relationship to *D. stictolaema* than to Amazonian populations of present species. Birds from NW Colombia (Córdoba) possibly intergrades between *darienensis* and *minor*. Amazonian races more uniform morphologically, but song of nominate differs so markedly that remaining three may warrant species status as *D. pallida*, with *zimmeri* and *connectens* as races. Populations in Andean foothills of E Ecuador apparently belong to *connectens*, but adjacent lowland birds possibly race *pallida*; further study required. Seven subspecies recognized.

#### **Subspecies and Distribution.**

*D. l. typica* Cherrie, 1891 - S Honduras (isolated site), and NC & SW Costa Rica E to C Panama (Chiriquí, Veraguas).

*D. l. darienensis* Griscom, 1929 - E Panama and adjacent NW Colombia.

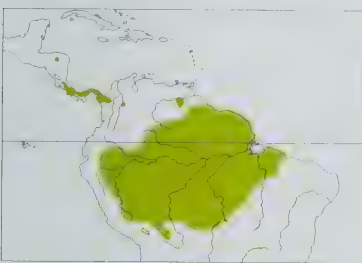
*D. l. minor* Todd, 1919 - NC Colombia (Santander).

*D. l. longicauda* (Pelzelin, 1868) - the Guianas and N Brazil, N of Amazon, from R Negro E to Amapá.

*D. l. connectens* J. T. Zimmer, 1929 - W & NW Amazonia, N of Amazon, from E Colombia and S Venezuela S to E Peru (W of R Ucayali) and NW Brazil (upper R Negro).

*D. l. pallida* J. T. Zimmer, 1929 - S Amazonia, S of Amazon, from E & SE Peru (E of R Ucayali) E to C Amazonian Brazil (E at least to R Tapajós) and S to N Bolivia and N Mato Grosso.

*D. l. zimmeri* Pinto, 1974 - SE Amazonian Brazil, S of Amazon, from at least R Tocantins (possibly from R Tapajós) E to Maranhão.



**Descriptive notes.** 17-18.5 cm (Panama), 19-22 cm (South America); 19-26 g (Costa Rica, Panama), 25-28 g (S Venezuela, Surinam), mean 29 g (Manaus). Medium-sized, slim woodcreeper with long wings and tail, relatively long neck, large "scruffy-looking" head, slim straight bill of medium length. Nominative race is largely olive-brown, with darker crown and nape both finely streaked buff, whitish to rich buffy lores and narrow but well-defined supercilium; back virtually unmarked, rufous-chestnut wings, uppertail-coverts and tail, dusky primary tips; throat whitish-buff to ochraceous; breast streaked buff, markings

more spot-like nearer throat, remaining underparts dull olive-brown and unmarked, becoming rufous on undertail-coverts; axillaries and underwing-coverts cinnamon-rufous; iris hazel to dark brown; upper mandible dark brown to blackish, lower mandible brownish-grey to bluish, tip sometimes black; legs and feet brown or bluish-grey to black. Distinguished from very similar *D. stictolaema* mainly by larger size, longer bill, more streak-like breast markings, less rufous on rump. Female is on average significantly smaller than male. Juvenile is similar to adult, but throat with brownish scaling, breast spots larger and less distinct. Relative to nominate, markings on throat and breast of both *connectens* and *pallida* paler and less ochraceous (becoming yellowish in *pallida*); those on breast of *connectens* more spot-like, those of *pallida* slimmer and more streak-like; *zimmeri* is more olivaceous, with throat, supercilium and breast markings even paler and more yellowish than *pallida*. Members of "typica subspecies-group" significantly smaller than nominate, with more spot-like markings on breast; taxa within group differ slightly in coloration and possibly size. **VOICE.** Three markedly different song types, each given at infrequent intervals throughout the day. Songs in Amazonia comprise series of clear whistles delivered slowly; nominate gives a series of 6-8 similar "chueeet" notes largely on one pitch, but each rising slightly at end; that of *pallida* (and apparently *connectens* and *zimmeri*) a clearly descending series of 8-12 shorter, sharper whistles, initial ones remaining on same pitch, but those later in song gradually becoming upward-inflected, "deee, deee, deee, deee, dueet, dueet, duu-eet, duu-eet, duu-eet". Song in Costa Rica very different, a weakly chirping "chih, chih, chip, chip, chip, chih, chih, chih..." trill that first speeds up, then slows, reminiscent of trill or rattle of *D. stictolaema*. Calls largely undescribed; in response to tape playback, nominate gives songs with more twitery notes, but members of "*pallida* group" give a constant chattering interspersed with occasional songs; when alarmed may repeat a harsh series of rapid, low trills at a rate of ca. 3/sec.

**Habitat.** Humid forest. In Amazonia, generally in *terra firme* and floodplain forests, less frequently in *igapó* or swamp-forest; in montane evergreen forest along slopes of Andes. Has been recorded in

dry or "semi-deciduous" forest in NW Bolivia. Generally interior of mature forest, sometimes at edge or in older second growth; captured in treefall gaps as often as within forest in Panama. Found in both lowlands and foothills, with Amazonian populations largely restricted to sites below 500 m, but possibly more common in foothills in Costa Rica, Panama and on E slope of Andes; at 400 m in Honduras; 400-1100 m on Caribbean slope in Costa Rica, but lowlands to 1400 m on Pacific slope; to 1400 m in Panama, where largely on Caribbean slope; to 1300 m in Colombia; on E slope of Andes found at 1200-1700 m in Ecuador and 685-1570 m in Peru. Populations occurring in lowlands and adjacent Andean foothills in some regions may represent different subspecies, for example, apparently *connectens* in foothills of E Ecuador, but possibly *pallida* in nearby lowlands.

**Food and Feeding.** Mainly, if not exclusively, insectivorous. Stomach contents in N Bolivia largely Hymenoptera (especially ants) and beetles (roughly 50% and 35% of diet, respectively, in one study), with a few bugs (less than 10%), and even fewer spiders, orthopterans, and other items; other studies found mainly beetles, but some orthopterans, a large cockroach (Blattodea), scorpions, cicadas, and other small insects. Apparently selects for prey of moderate size: 42% of items smaller than 7 mm, 57% were 8-16 mm, but less than 1% over 16 mm. Often forages singly, occasionally in pairs, with mixed-species flocks of both understorey and canopy; not strictly tied to flocks, and regularly switches between different ones. Usually seen as it hitches up slim to medium-sized trunks and vines from upper understorey to subcanopy (5-15 m up), less frequently lower, rarely up into canopy; forages in higher strata than used by *D. stictolaema*. Numerous reports of foraging closer to ground may reflect ease of observation. Sallies for flushed prey at times, but probably pecks or gleans much of its prey from trunks. Foraging overlap with larger *Xiphorhynchus* limited enough for peaceful coexistence with minimal aggression. Maintains overlapping home ranges, rather than exclusive territories. Rarely follows army-ant swarms. Occasionally observed "anting".

**Breeding.** Nest with eggs in Apr in Costa Rica; female with brood patch in mid-Aug and dependent young seen in early Nov in French Guiana; specimen in breeding condition in Feb in S Venezuela; a bird in N Brazil (Amapá) in late Jun was in non-breeding condition. One known nest, located in cavity c. 9 m up in dead trunk, cavity c. 1 m deep, lined with dry leaves. Clutch 2 white eggs, 22 × 17 mm; incubation at least by female, which seen to carry a dead leaf back to nest.

**Movements.** Chiefly resident. Reported as accidental visitor at La Selva Biological Station, in Costa Rica, suggesting some wandering, possibly from higher elevations.

**Status and Conservation.** Not globally threatened. Probably uncommon throughout most of Amazonian range, but even less common and more local in Central America. Shy nature and infrequent singing makes it inconspicuous and difficult to detect. Not seen in Honduras since first recorded, in 1953; apparently most common in Costa Rica in lowlands of SW; seems never to have been common in Panama, where most easily encountered in Canal Zone, and no recent records from W Chiriquí, where possibly extirpated. Only twice recorded in Surinam but fairly common to common in Guyana; generally uncommon to fairly common in Colombia and SE Peru, and fairly common to common at some Amazonian sites in Brazil; rare and local in Ecuador. Estimated densities in both upland forest in French Guiana and floodplain-forest in SE Peru 2 pairs/100 ha, and at a Panamanian site 5 pairs/100 ha; territory size at Peruvian site averaged 16 ha. Highly sensitive to habitat modification and requires nearly continuous forest; near Manaus, in Brazil, disappeared altogether in fragments of 1 ha in size, and numbers greatly reduced in those of 10 ha. Considered an indicator species for tropical lowland evergreen forest on Caribbean slope of Central America.

**Bibliography.** Anon. (1998a), Bates & Parker (1998), Bierregaard (1988), Bierregaard & Lovejoy (1989), Bond & Meyer de Schauensee (1942), Borges *et al.* (2001), Brace *et al.* (1997), Carriker (1910), Chapman (1926), Cherrie (1892), Chubb (1921), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1925), Foster *et al.* (1994), Griscom (1926, 1929, 1933), Gyldestolpe (1945a), Haverschmidt & Mees (1994), Hellmayr (1907b, 1910), Hespénheide (1980), Hilty (2003a), Hilty & Brown (1986), Howell, S.N.G. & Webb (1995a), Howell, T.R. (1956), Jullien & Thiollay (1998), Karr (1971a, 1971b, 1982a), Karr, Robinson *et al.* (1990), Meyer de Schauensee (1950a, 1950b, 1964, 1966), Meyer de Schauensee & Phelps (1978), Monroe (1968), Moskovits *et al.* (1985), Munn (1985), Munn & Terborgh (1979), Novaes (1974, 1976), Orians (1969), Parker & Bailey (1991), Parker *et al.* (1982), Pelzelin (1868-1871), Penard & Penard (1908-1910), Peres & Whittaker (1991), Phelps & Phelps (1963), Pinto (1978), Ridgely & Gwynne (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgway (1911), Robbins *et al.* (1985), Rocha & Peñaranda (1992), Schemske & Brokaw (1981), Servat (1996), Sick (1993), da Silva *et al.* (1990), Slud (1964), Sneath (1914), Snyder (1966), Stiles (1983b, 1985), Stiles & Skutch (1989), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Stouffer & Bierregaard (1995), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1990, 1994), Thiollay & Jullien (1998), Tostain (1980b, 2002b), Tostain *et al.* (1992), Wetmore (1972), Willard *et al.* (1991), Willis (1977, 1986), Zimmer (1929, 1934c).

### 8. Spot-throated Woodcreeper

#### *Deconychura stictolaema*

**French:** Grimpur à gorge tachetée

**Spanish:** Trepatroncos Gorgipunteado

**German:** Kehlflücken-Baumsteiger

**Other common names:** Ecuadorian Woodcreeper (*secunda*)

**Taxonomy.** *Sittasomus stictolaemus* Pelzelin, 1868, Borba, Rio Madeira, Amazonas, Brazil. Possibly closest to "typica group" of *D. longicauda*, size and vocalizations of which more similar to present species than to Amazonian *D. longicauda*. Race *secunda* has been considered a separate species by some authors. Racial identity of birds from extreme E of range in Brazil (E of R Tocantins, to Maranhão) not known; tentatively included within nominate. Three subspecies recognized.

#### **Subspecies and Distribution.**

*D. s. secunda* Hellmayr, 1904 - W Amazonia from S Colombia and S Venezuela (S Amazonas) S to E Ecuador, NE Peru and NW Brazil (E to R Negro and R Madeira).

*D. s. clarior* J. T. Zimmer, 1929 - NE Amazonia, N of Amazon, in Brazil from R Negro E to Amapá, and French Guiana; populations in Guyana presumably this race.

*D. s. stictolaema* (Pelzelin, 1868) - S Amazonian Brazil, S of Amazon, from R Madeira E to lower R Tocantins and Maranhão, and S to N Mato Grosso.

**Descriptive notes.** 16.5-19 cm; male 14-22 g, female 13-17 g (Venezuela, Brazil). Small, slim woodcreeper with long tail, and slim, relatively short bill. Nominative race has crown and, to a degree, nape weakly streaked buff, pale lores inconspicuous, narrow buffy supercilium slightly more distinct; largely olive-brown above, darker on crown and back, blending to bright rufous-chestnut on lower back to uppertail-coverts; remiges dusky brown, blending to rufous towards tips of inner secondaries, and often with an area of bright cinnamon at shoulder; tail russet to deep chestnut; throat dull buff to olive-buff with darker speckling; dull olive-brown below, upper breast conspicuously marked with wedge-shaped buff spots, more streak-like at sides; wing-linings cinnamon-buff; iris dark brown; bill dark brown, lower mandible silvery to blackish-brown; legs and feet greyish-blue to brownish-grey. Distinguished from very similar *D. longicauda* mainly by smaller size, proportionately shorter bill, nearly unstreaked crown, more spot-like breast markings and, when evident, more extensively rufous rump; from *Glyphorhynchus spirurus* by larger and slimmer body and especially longer, slimmer bill. Female is like male. Juvenile plum-







Amazonia E of R Madeira (probably *transitivus*) song differs strikingly, comprising a series 4-4-5 seconds long of 7-8 clear whistles that descend slightly in frequency and cadence, "wip, whee, wheep, wheep, wheep, wheep, wheep, whip". In SE of range (*sylvellus*) song is a descending series of 8-10 evenly spaced "kwip" or "weep" whistles that accelerates slightly, especially at end. Vocalizations of *reiseri* include relatively soft "wit" or "weet" notes and disyllabic "whi-du" or "whe-doo", given in series both alone and in combination; in a single recording, apparently of full song, 17 almost evenly spaced notes in 5-second series began with 2 quiet "whi-du" notes followed by 8 "weet" notes that increased slightly in amplitude, then another disyllabic note, and finally a slightly decelerating series of 6 additional "weet" notes. Variety of additional calls include single "weep" or "weet" whistle at 1 per second and occasionally doubled (*sylvellus*), short dry rattle suggesting song of Long-billed Gnatwren (*Ramphococcyz melanurus*) (*sylvioides*), and dry rattling or "churring" on one pitch that either remains at same frequency and speed (*gracileus*) or begins quietly but increases markedly in intensity and sometimes speed near end (*sylvellus*); in some populations, rattles often accompanied by rapid wing-quivering.

**Habitat.** Variety of wooded habitats, mostly lowland evergreen forest, but populations in mountains range into montane evergreen forest and cloudforest, and those in drier regions occupy deciduous woodland, gallery forest, *caatinga* and *cerrado*; in Amazonia most common in *terra firme* forest, less frequent in seasonally flooded forests (both *várzea* and *igapó*). Typically in interior, canopy and edge of mature forest, less often older second growth and tree plantations, but in drier regions found in more scrubby habitats; in some places favours relatively open woodland, and recorded in pine (*Pinus*) woodland in Belize and mangroves in Panama. Primarily in lowlands and foothills below 1550 m; locally to 2000 m on Pacific slope in Mexico, and occasionally to 2200-2300 m in N Venezuela, Bolivian Andes and SE Brazil.

**Food and Feeding.** Diet comprises chiefly invertebrates (mostly arthropods), but vegetable matter occasionally taken. Detailed analysis of stomach contents in S Mexico revealed items typical of tree trunks, such as ants (especially *Pheidole*), a variety of small beetles, pseudoscorpions, and spiders, with fewer bugs (Hemiptera), termites (Isoptera), planthoppers (Homoptera), and trace quantities of other invertebrate groups (including snails); study in SE Brazil documented primarily adult and larval beetles (64%) and cockroach (Blattodea) egg cases (24%), with small quantities of bugs, flies, ants, planthoppers and termites. Elsewhere, additional items recorded as taken are small wasps, caterpillars, adult cockroaches, ant-lions (Myrmecoleonidae), eggs and pupae of various insects, ticks, and occasionally fruit seeds. Most prey small, usually less than 5 mm, but some items over 17 mm in length. Usually seen alone, sometimes in twos, and often with mixed-species flocks in both understorey and canopy; at some sites at least, leaves flocks during breeding season or during periods of wind or rain. Birds spent c. 60% of their time with flocks at site in SE Peru, where they moved between two or more flocks, with some individuals alternating freely between understorey and canopy flocks; present in up to 50% of flocks studied at site in NE Mexico, 56% of flocks at Amazonian sites, 33% at site in Venezuelan *llanos* and 67% in SE Brazil (varying with site, habitat and season). In one study, associated with troops of foraging lion-tamarins (*Leontopithecus chrysopygus*) for 3-9% (depending on season) of latter's activity period, one association lasting 35 minutes; sallied after insects dislodged by the primates. Regular presence at swarms of army ants (both *Eciton burchelli* and *Labidus praedator*) documented in S Mexico and SW Panama, mostly when with mixed-species flocks that joined swarms only briefly; shows no affinity for following army ants in Amazonia. Forages while rapidly hitching directly or spirally up trunks and large limbs. In SE Brazil, 30% of foraging was on branches (as opposed to trunks) and 36-86% on rough bark, sometimes explores branches covered with moss or lichen. Prefers trees larger than average size (mean girth at 1.3 m was 75 cm at site in SE Brazil), but high variance in trunk diameter may promote use of a wide variety of forest types; dead trees visited only rarely. Height preferences may differ by region, with birds typically foraging from mid-levels to canopy at some sites (averaging 8.5 m above ground in SE Peru, 7.5 m in SE Brazil), but often remaining in understorey and mid-levels at others, especially at edges. Compared with larger woodcreepers at site in SE Brazil, this species used slimmer trunks and branches (mean 13 cm), foraged slightly higher (mean 7.5 m, range 0-17 m), and hitched an average of 2 m up each trunk; niche overlap in these parameters moderately high with *Xiphorhynchus fuscus*, low with *Xiphocolaptes albicollis*. In Amazonia, diet and substrate overlap moderate only with much larger *Xiphorhynchus obsoletus*, which is partially tolerant of it (aggression upon contact only occasional). Most prey taken in mid-air during short but often erratic sallies after insect flushed during bird's rapid ascent (c. 55% in one study), but some items pecked or gleaned from bark surface (c. 45%); clusters of suspended dead leaves occasionally inspected.

**Breeding.** Birds in breeding condition in mid-Mar to late May in Central America (Mexico, Belize, N Guatemala), Mar-Jun in N Colombia and NE Venezuela, early Jul in NE Brazil, mid-Aug to mid-Oct in S Amazonia, and Oct to early Dec in S & SE Brazil, Paraguay and Uruguay; nest-building during late Mar to mid-Apr and incubation from latter time in Costa Rica; adults carrying food to nest in mid-May in SW Mexico; juveniles in Mar in SE Brazil and mid-Jul to late Jul in S Mexico. Few nests documented, one 12 m up in skyward-facing cavity in trunk of dead palm (*Euterpe*) was probably lined with dry leaves, another c. 7.5 m up in concealed crevice at top of slim broken-off trunk; others said to have been in tree cavities and abandoned holes of woodpeckers (Picidae) but with no additional data. Clutch apparently 3 white eggs, average 20 × 15 mm in Argentina, 21.5 × 16 mm in Tobago; incubation sessions at one nest 2-58 minutes, separated by recesses of 7-25 minutes; bird often returned to nest with dead leaf; observations at one nest suggested that it was attended by a single adult, but at another two adults seen together while feeding young.

**Movements.** Apparently resident throughout range. In S Mexico, three of four individuals translocated to nearby site soon returned to their territories. Present at ant swarms in forest and shade coffee plantations in SW Panama in comparable numbers during Jan-Apr but decreased markedly in coffee during May-Jun, suggesting that it wanders from forest more during non-breeding season.

**Status and Conservation.** Not globally threatened. Fairly common to common from C Mexico locally through Costa Rica and Panama, and over much of Amazonia and rest of South American range, but inconspicuous and often difficult to detect visually. Uncommon and possibly local in Guyana and at some sites in SC Amazonia, and apparently absent from much of E Amazonia; locally fairly common in Tobago, despite its absence from Trinidad. Densities in mid-successional vegetation and mature floodplain-forest in SE Peru suggested to be 9-19 birds/100 ha; home range estimated at 3-5 ha at Costa Rican site, but 9 ha at site in SE Peru. Generally believed to be moderately sensitive to habitat disturbance and requires at least patchy forest, but some populations may show greater degree of sensitivity than others. In various studies in SE Brazil, was found to survive in fragments as small as 50 ha, below which most populations disappear; remained abundant in 40-ha fragment connected to continuous forest, but declined significantly in smaller fragments not so well linked to forest, and especially in isolated ones. One study further documented a significant "edge-effect", with birds recorded less frequently within 200 m of forest edge. Sharp decline noted on Yucatán Peninsula following major hurricane, but recovered to pre-hurricane abundance within two years (in areas where forest had not been subsequently burnt).

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(1953, 1958), Brooke (1983), Cândido (2000), Carriker (1935a), Chubb (1921), Claramunt (1998), Coates-Estrada & Estrada (1989), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1925), Davis, D.E. (1946), Davis, L.J. (1972), Davis, S.E. (1993), Di Giacomo & López (1998), Dickey & van Rossem (1938), Durães & Marini (2003), Eaton (1972), Edwards (1972), Esteban (1948), Ifrench (1991), Fjeldså & Krabbe (1990), Foster *et al.* (1994), Goerck (1999a), Hayes (1995), Hellmayr (1908, 1917), Herklots (1961), Hilty (2003a), Hilty & Brown (1986), Holmberg (1939), Howell & Webb (1995a), Karr, Robinson *et al.* (1990), Kreuger (1967), Land (1970), Lopes *et al.* (2003), Lynch (1991), Machado (1999), Maldonado-Coelho & Marini (2000), Menegaux & Hellmayr (1906a, 1906b), Meyer de Schauensee (1950a, 1964), Meyer de Schauensee & Phelps (1978), Monroe (1968), Munn (1985), Munn & Terborgh (1979), Naka & Rodrigues (2000), Narosky & Yzurieta (1993), Navarro *et al.* (1992), Nelson (1900), Oniki & Willis (1999a, 2001), Orians (1969), Parker *et al.* (1995), Passos (1997), Paynter (1955, 1957), Pearman (1993a), de la Peña (1977, 1988), Peterson & Chalif (1973), Phelps & Gilliard (1940), Phelps & Phelps (1956, 1963), Phillips (1962), Pinto (1932, 1978), Pinto & Camargo (1948), Powell (1979, 1980), Puebla (2001), Ramos & Rappole (1994), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1891, 1911), Robbins *et al.* (1985), Roberts *et al.* (2000), Robinson & Terborgh (1997), Rocha & Peñaranda (1992), Rowley (1966), Russell (1964), Salaman, Donegan & Cuervo (2002), Schäfer & Phelps (1954), Schubart *et al.* (1965), Short (1975), Sick (1993), Skutch (1967), Slud (1964), Smithe (1966), Smithe & Paynter (1963), Soares & dos Anjos (1999), Stiles (1983b), Stiles & Skutch (1989), Stotz *et al.* (1996), Sutton (1955), Taczanowski (1884), Thiollay & Julien (1998), Tostain *et al.* (1992), Wetmore (1926, 1970, 1972), Willard *et al.* (1991), Willis (1977), Willis & Oniki (2001b).

## Genus *GLYPHORYNCHUS* Wied, 1831

### 10. Wedge-billed Woodcreeper

#### *Glyphorynchus spirurus*

**French:** Grimpar bec-en-coin

**Spanish:** Trepatroneos Picoeña

**German:** Keilschnabel-Baumsteiger

**Taxonomy.** *Neops spirurus* Vieillot, 1819. South America = "Cayenne".

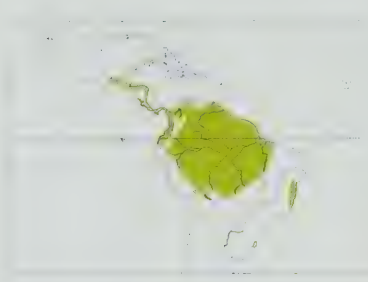
An exceptionally small and morphologically distinctive woodcreeper that, despite appearing similar to a *Xenops* (Furnariidae), is allied with woodcreepers on the basis of both anatomy and pterylosis. Possibility that more than one species is involved suggested by existence of two markedly different song types, combined with several well-differentiated races; however, molecular data suggest gene flow between some neighbouring, morphologically distinctive subspecies. Significant genetic distances have been documented between some populations, but geographical pattern difficult to explain: genetic differentiation inconsistent with subspecific taxonomy, but may better support geographical patterns defined by vocalizations. All birds in C Brazil E from R Tapajós tentatively placed with *paraensis*, but those from E bank of R Xingu said to be intermediate between that and *inornatus*; recent records from NE Bolivia (Santa Cruz) also probably attributable to latter race; more work needed to clarify limits of races. Characters of *rufigularis* possibly lie within range of individual variation of *castelnaudii*, a highly variable taxon. Described race *sublestus* (S Central America) synonymized with individually variable *pectoralis* (birds from Nicaragua and Costa Rica intermediate between the two), which intergrades with *pallidulus* in E Panama (Caribbean slope in SE Colón). Thirteen subspecies recognized.

#### **Subspecies and Distribution.**

*G. s. pectoralis* P. L. Selater & Salvin, 1860 - Central America, from S Mexico (S Veracruz, N Oaxaca, Chiapas, mostly Caribbean slope), C Guatemala (Caribbean slope, rarely Petén) and Belize, S to Costa Rica (both slopes) and C & W Panama (on Caribbean Slope E to E Colón, on Pacific slope to W Chiriquí).  
*G. s. pallidulus* Wetmore, 1970 - E Panama (Caribbean slope from SE Colón E through San Blas, Pacific slope from E Panamá E to N Darién) and adjacent NW Colombia (N Chocó).  
*G. s. subrufescens* Todd, 1948 - Pacific coast of SE Panama (R Jaqué Valley, in SW Darién), W Colombia (N Chocó and Antioquia S to Nariño, also upper valleys of R Atrato and R San Juan) and W Ecuador.  
*G. s. integratus* J. T. Zimmer, 1946 - N Colombia (upper R Sinú E to middle Magdalena Valley and S to W Boyacá, also E of Andes from Norte de Santander S to NW Arauca) and W Venezuela (Zulia, S Táchira, W Mérida, NW Barinas, SE Lara).  
*G. s. rufigularis* J. T. Zimmer, 1934 - NW Amazonia, N of Amazon, from C Colombia (S from Meta and Vichada) and S Venezuela (S Bolívar, Amazonas) S to NE Ecuador (upper R Napo) and NW Brazil (E to E bank on upper and NW bank on lower R Negro).  
*G. s. amacurensis* Phelps, Sr. & Phelps, Jr., 1952 - NE Venezuela (Sucre, Delta Amacuro).  
*G. s. spirurus* (Vieillot, 1819) - NE Amazonia, N of Amazon, in E Venezuela (NE Bolívar), the Guianas and N Brazil (lower R Negro E to Amapá).  
*G. s. coronobscurus* Phelps, Sr. & Phelps, Jr., 1955 - Cerro de la Neblina (above 1400 m), in S Venezuela (S Amazonas).  
*G. s. castelnaudii* Des Murs, 1855 - W Amazonia, S of Amazon & R Napo, in E & NE Peru (S to Junin) and W Brazil (E to R Madeira).  
*G. s. albigularis* Chapman, 1923 - SW Amazonia in SE Peru (Puno) and N Bolivia (S to La Paz, Cochabamba).  
*G. s. inornatus* J. T. Zimmer, 1934 - S Amazonian Brazil (S of Amazon, from R Madeira E to R Tapajós and S to SW Mato Grosso); also recently recorded NE Bolivia (Santa Cruz).  
*G. s. paraensis* Pinto, 1974 - SE Amazonian Brazil, S of Amazon, from R Tapajós E to N Maranhão (including Marajó I).  
*G. s. cuneatus* (M. H. K. Lichtenstein, 1820) - coastal E Brazil (N Bahia S to N Espírito Santo); erroneously reported from Argentina.

**Descriptive notes.** 13-16 cm; 10.5-21 g. The smallest woodcreeper; short, upturned bill distinctly wedge-shaped, much like that of a *xenops* (*Xenops*). Nominate race has light buff lores, thin buff to buff-white supercilium behind eye, buff eyering nearly complete, sooty-brown auriculars finely streaked dull buff white; forehead greyish with pale shaft streaks; crown, nape, upper back and scapulars rich brown to russet-brown; lower back, rump and tail cinnamon-rufous to rufous-chestnut; tail with protruding spines long and conspicuous; wing-coverts russet; inner secondaries rufous, remaining secondaries and primaries dark brown, all with blackish tips; base of remiges (except outer three primaries) with wide stripe of buff to buff-white across inner webs, forming band across spread wing; malar stripe and sides of neck brown with small buff spots, streaks or triangles; throat whitish-buff to buff, lightly spotted dusky; underparts olive-brown to russet-brown, upper breast with large rounded fulvous spots, these grading to narrow streaks on lower breast, undertail-coverts washed rufous-chestnut distally; underwing-coverts and axillaries white, tending towards ochre at edge of wing; iris dark brown to amber; bill black, base of lower mandible grey; legs and feet pinkish-grey, dark grey, dark greenish or brownish-black. Easily distinguished from





other dendrocolaptids by small size and short, wedge-shaped bill; from similarly sized *Sittasomus griseicapillus* also by facial streaking and breast spots. *Deconychura stictolaema* of Amazonia and *D. longicauda* in S Central America have similar plumage patterns, but both are larger and their bills are longer, slimmer, and straight to slightly decurved. Bill shape and plumage patterns more closely approach those of *Xenops* and other small, trunk-foraging Furnariids, from which, distinguished by behavior of ascending trunks and branches using tail as a prop, rather than foraging near tips of branches with tail held outward; some

*Xenops* further differ by white cheek-stripe and others by black striping in tail. Female is like male. Juvenile is similar to adult, but breast streaking less pronounced, throat scaling darker and heavier, crown feathers with dusky edges. Races vary in throat colour (generally rufous in Amazonia, buffy to N & E), extent and shape of breast markings (spots in N South America, triangular in N & S), intensity of breast markings (heavier in N), general coloration of plumage (more russet in N, browner in S) and bill size (heavier in E); marked individual variation further complicates assessment of geographic patterns. Race *amacurensis* similar to nominate, but throat paler and yellowish, crown and underparts more olivaceous and back browner; *castelnaudii* also similar to nominate but darker and more olivaceous below, with bill shorter and stouter; *ruficularis* similar to *castelnaudii* but throat deep rufous and with less dark flecking, underparts browner (less olive), edges of remiges more rufescent, wingband darker ochraceous, size smaller and bill slimmer; *coronoboscus* most like *ruficularis* but with crown darker and more dusky-brown and underparts more olivaceous (less brownish); *albigularis* has throat and breast spots more whitish, the latter also narrower than in other races, and bill heavier. Remaining races from S Amazonia and E Brazil (*inornatus*, *paraensis*, *cuneatus*) similar to each other, with throat paler and buffier than in *castelnaudii*, and markings on breast less extensive and more triangular; *inornatus* has dark flecking on throat browner and spotting largely restricted to upper breast, leaving browner (less olive) belly largely unmarked; *cuneatus* browner above than *castelnaudii*, with paler throat more heavily and extensively marked, bill much heavier; *paraensis* closely similar to *cuneatus*, but with overall plumage more olive-brown (less ferruginous), throat spotting slightly rufescent, bill even heavier. In N of range, race *pectoralis* similar to *castelnaudii* but with throat cinnamon-buff, breast markings triangular, longer and extending to upper belly; *pallidulus* like *pectoralis* but paler; *subrufescens* similar to *pectoralis* but darker, smaller, with breast streaking reduced; *integratus* like *subrufescens*, but paler both above and below, and with throat a paler buff in color. VOICE. Sings relatively infrequently, primarily at dusk and dawn, occasionally during day. Song geographically variable, with at least 3 song types, from Central America and NW South America, N and W Amazonia, and SE Amazonia and Atlantic forests of E Brazil; birds in both Central America and most of Amazonia give an ascending series of upslurred whistles. In Central America and NW Colombia song a rapidly ascending, accelerating and somewhat slurred series of c. 25 bubbly notes in less than 3 seconds, "twee-lee-lee-le-lee-ee-ee-ee-ee-ee"; in N & W Amazonia a series of relatively clear whistles that ascends more slowly, 4-12 notes in 2-3 seconds, "too-e too-e tu-tu-tu-tue" "tue" "tue" "tweetweet"; in Manaus notes are more burry and almost run together. Song in SE portion of range 2 short, clear whistles in with second note somewhat lower in frequency than first, "treeee, treep". Characteristic call heard far more often, a sneezing "cheeyf!", "chiff!", "schip" or "ksh", often repeated once or twice; also strident "psieh" or "djcep", often doubled; nestlings give sharp rapid peeping, and fledglings a descending series of 5-6 scratchy notes, the first loudest, "kekekekiki".

**Habitat.** Primarily tropical evergreen forest in lowlands and foothills, less frequently lower montane evergreen forest. Amazonian populations occur principally in *terra firme* and floodplain forest, occasionally in gallery forest, palm swamps, riverine scrub, or seasonally flooded forest (both *várzea* and *igapó*); ranges from S Amazonia a short distance into *cerrado* region. Mostly in interior of mature forest, less often forest edge and older second growth; sometimes visits bamboo thickets, younger second growth, tree plantations, or even scattered trees amid clearings. At one site captured slightly more frequently within unbroken forest than at treefall gaps. Generally below 1200 m; locally into lower subtropical zone to 1500 m in SW Costa Rica & SW Panama, 1800 m in Venezuela, and 2100 m in SW Panama and Colombia.

**Food and Feeding.** Diet chiefly arthropods, but occasionally takes vegetable matter. Diversity of prey significantly lower than that of larger woodcreepers, showing a positive correlation with taxa captured in traps placed on tree trunks. Stomachs from SE Peru contained mostly beetles (found in 74% of stomachs in sample); those from S Mexico mostly ants (especially *Pheidole*), with smaller numbers of beetles, termites (Isoptera) and pseudoscorpions. Spiders, hemipteran and homopteran bugs, planthoppers (Homoptera), flies, small larvae, and small seeds and other vegetable matter recorded in small quantities. Most prey taken are minute (usually less than 5 mm) and difficult to identify in the field. Usually forages in pairs, less frequently alone, and often with mixed-species flocks that pass through its territory; facultatively joins foraging flocks, especially in understorey (in various studies, 40-48% of observations were of birds in flocks, and present in up to 45% of flocks studied at Amazonian sites); shows marked preference for flocks led by *Thamnomanes* antshrikes. Hitches rapidly up trunks and sometimes limbs, either directly or spirally, primarily in lower and middle strata (in one study, 96% of observations less than 7 m above ground), less

## Family DENDROCOLAPTIDAE (WOODCREEPERS) SPECIES ACCOUNTS

frequently into subcanopy or canopy; seems to prefer thick trunks with either flaky or rough bark, rather than slimmer trunks and branches. Most prey pecked or gleaned from surface of or crevices in trunks, or at edges of lichen clumps; regularly also flakes bark, hammers on wood, and pries off larger strips of bark. Unlike most woodcreepers, almost never follows army ants, instead seen near them almost exclusively when mixed-species flocks casually pass by active swarms; seemingly attracted more to bird activity than to ants and the prey they flush. When over ants, forages 1-15 m up, usually on relatively thick (10-50 cm) vertical trunks at periphery of swarm. Usually seen at ant swarms as singles and pairs, sometimes family groups. Subordinate to all larger woodcreepers, and observed being either supplanted or displaced by *Dendrocincla merula* and *D. fuliginosa*, *Xiphorhynchus susurrans* and *Dendrocolaptes sanctithomae*. Often quite nervous, regularly flicking wings, especially when agitated.

**Breeding.** Breeds mostly Mar-Jun in Costa Rica, May-Oct in Panama, but during both dry seasons Jan-Apr and Jun-Nov in the Guianas; nests with eggs in early Oct in Belize, mid-Apr to late Jun in SE Nicaragua and Costa Rica, late Feb in NW Colombia, late Jan to mid-Apr in N Amazonia, and late Sept to early Dec and mid-Feb to Jun in E Amazonian Brazil; nest building late Jan (French Guiana); nestlings in mid-Apr in Costa Rica, in late May in C Amazonian Brazil and in mid-Nov in French Guiana; and recently fledged young in early Feb in Surinam and mid-Jul in Panama; birds in breeding condition also in early Nov in Belize, Jul in Nicaragua and Costa Rica, early Feb to mid-Jun in E Amazonian Brazil, and late Sept to early Oct in S Amazonia, and Jan-Apr in N & SE Colombia, S Venezuela, NW Brazil and Guianas. Nest a shallow woven cup of fine rootlets, root hairs, dried stems or other fibrous material, c. 60 mm wide and 65 mm deep, placed in natural cavity within hollow tree, decaying stump, amid vine tangle, between buttress roots or furrowed trunks, at base of dead palm frond, or sometimes old hole of woodpecker (Picidae) used; cavity generally less than 6 m above ground, usually much lower, entrance usually a narrow slit, with nest cup sometimes well below entrance and near, or even below, ground level. Clutch 2 white eggs, rarely 1 or 3, average  $19 \times 15$  mm, laid on alternate days; sexes share in incubation, brooding, and brood-feeding; parents continue to bring material to nest during incubation, eggs attended constantly, incubation shifts at one nest 18-90 minutes; newly hatched chick has pink skin, long grey down; at one nest, chicks brooded for 76% of morning when 1-2 days old, and when 1 week old fed with single tiny insects 20 times in 5 hours; nestling period 17 days. High rate of nest failure in one study attributed to mortality caused by flooding after heavy rains.

**Movements.** Largely resident throughout range; may show limited altitudinal migration in Costa Rica. **Status and Conservation.** Not globally threatened. Fairly common to common over most of range; uncommon in N at some sites in Mexico, Belize and Honduras. Geographically isolated race *cuneatus* uncommon in what little forest remains within its limited range in E Brazil; its populations should be monitored. Estimated densities in *terra firme* forest in French Guiana remarkably high, 28-36 pairs/100 ha, but those in mature floodplain-forest in SE Peru believed to be significantly lower, at 9 pairs/100 ha of occupied territory; density likewise low at a Panamanian site, only 5 pairs/100 ha. Home ranges of individually marked birds in French Guiana averaged c. 3 ha; whereas one study documented what appeared to be exclusive home ranges, in most studies home ranges found to overlap broadly with no areas of exclusive use. Large, overlapping home ranges may account for unusual combination, reported in many mist-net studies, of high rates of capture but low rates of recapture. Despite a preference for interior of mature forest, an ability to survive in second growth and forest fragments at many sites suggests a lower degree of sensitivity to habitat disturbance than is true of most woodcreepers; even so, various studies have recorded significantly lower abundances up to 8-12 years after sites selectively logged, but at one site captures in second growth 25-35 years old were close to those in mature forest. Although found in one study to survive in reduced numbers even in relatively small fragments over long term, birds in these fragments grew rectrices more slowly than did those in continuous forest, suggesting that they were in poorer physiological condition.

**Bibliography.** Anon. (1998a), Bates (2000), Beebe (1925), Bierregaard & Lovejoy (1989), Blake, E.R. (1953), Blake, J.G. & Loiselle (1991), Brumfield & Capparella (1996), Canaday (1997), Carriker (1910), Chapman (1917, 1926), Cherrie (1916a), Chubb (1921), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1925), Dick *et al.* (1984), Dubs (1992), Dyre (1990), Edwards (1972), Eisenmann (1952), Foster, M.S. (1975), Foster, R.B. *et al.* (1994), Graber & Graber (1959), Gradwohl & Greenberg (1980), Greeney (1999), Griscom (1932a), Gyldestolpe (1945a, 1951), Hartert & Goodson (1917), Haverschmidt & Mees (1994), Hellmayr (1910), Hilty (1997, 2003a), Hilty & Brown (1986), Howell, S.N.G. & Webb (1995a), Howell, T.R. (1957), Huber (1932), Ingels *et al.* (2003), Jones (1977), Jullien & Thiollay (1998), Karr (1971b), Karr, Robinson *et al.* (1990), Kricher & Davis (1998), Land (1963, 1970), Levey (1988), Levey & Stiles (1994), Lovejoy (1974), Marks *et al.* (2002), Mazar Barnett & Pearman (2001), Meyer de Schauensee (1950a, 1964), Meyer de Schauensee & Phelps (1978), Miller *et al.* (1957), Monroe (1968), Naumburg (1930), Novaes (1969, 1970, 1974, 1976, 1980), Novaes & Lima (1990, 1992), Olivares (1958), Oniki (1972a, 1979c), Oniki & Willis (1972, 1982, 1983a), Orians (1969), Parker & Bailey (1991), Parker & Carr (1992), Penard & Penard (1908-1910), Peres & Whittaker (1991), Peters (1929), Peterson & Chalif (1973), Phelps & Phelps (1963), Pinto (1947, 1953, 1978), Powell (1979), Puebla (2001), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robbins *et al.* (1985), Robinson & Terborgh (1997), Romero-Zambrano (1978), Russell (1964), Schubart *et al.* (1965), Servat (1993, 1996), Sick (1993), Skutch (1969c, 1981), da Silva & Oniki (1988), Slud (1960, 1964), Snyder (1966), Stiles (1983b, 1985), Stiles & Skutch (1989), Stotz & Bierregaard (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer & Bierregaard (1995), Stratford & Stouffer (2001), Sturgis (1928), Taczanowski (1884), Teixeira *et al.* (1993), Terborgh (1985), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1992, 1994), Thiollay & Jullien (1998), Tostain (1980b, 2002b), Tostain *et al.* (1992), Wendelken & Martin (1986), Wetmore (1970, 1972), Willard *et al.* (1991), Willis (1972b, 1977, 1980, 1983d, 1986), Willis & Eisenmann (1979), Zimmer (1930, 1934e).



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PLATE 32

Family DENDROCOLAPTIDAE (WOODCREEPERS)  
SPECIES ACCOUNTS

Genus *DRYMORNIS* Eyton, 1852

11. Scimitar-billed Woodcreeper

*Drymornis bridgesii*

French: Grimpar porte-sabre

Spanish: Trepatroncos Chinchero

German: Degensehnabel-Baumsteiger

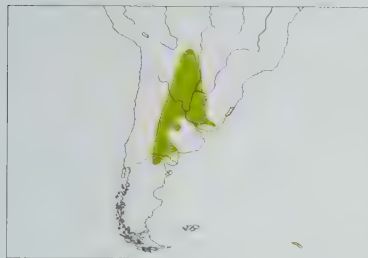
Other common names: Bridges's Woodcreeper, Scimitar-billed/Bridges's Woodhewer

**Taxonomy.** *Nasica bridgesii* Eyton, 1849, interior of Bolivia; error = Mendoza, Argentina. May be ancestral to all other Dendrocolaptidae; syrinx structure differs from that of all others, and genus is one of very few not infested by *Platyacarus* leather mites. Characters ascribed to proposed race *meridionalis* (from La Pampa, in Argentina) appear to reflect largely individual variation. Monotypic.

**Distribution.** SC South America in SE Bolivia, W Paraguay, W & C Uruguay, extreme S Brazil (SW Rio Grande do Sul), and Argentina (S to E Neuquén and N Rio Negro, E to Corrientes and Entre Ríos, rarely NE & SW Buenos Aires).

**Descriptive notes.** 29-35 cm; male 76-90 g, female 87-110 g. Large woodcreeper with heavy body, relatively short tail, long sickle-like bill. Bold white supercilium and moustachial stripe contrast conspicuously with dark rufous face mask and submoustachial stripe; forehead and crown rufous-chestnut to dark brown, nape slightly lighter; back and wing-coverts cinnamon-brown to light reddish-brown, remiges darker brown, rump and tail rufous-chestnut; throat white, underparts warm reddish-brown boldly streaked with white throughout, each streak edged with dark brown, streaks broad on breast and sides, narrower on belly and even more so on undertail-coverts; iris yellowish or light greyish-brown to dark brown; bill brown to black, paler (sometimes pinkish) lower mandible darkening distally; legs and feet horn-coloured, grey or dull black. Sexes similar. Juvenile has side of neck streaked with dark and light chestnut, thighs clear cinnamon, bill short and straight; fledgling has greyish to yellowish-grey bill with yellow gape-flanges. **Voice.** Song a loud, rapid sequence of whistled notes, often descending and ending in jumble, described as "deWEEdel-DLEEdeL-DLEEdeL..." or long "tweedle, tweedle, tweed, twee, twee..." that first accelerates, then loses volume. Only woodcreeper noted for duetting, and distinctively tilts head back when singing. Calls include loud "tsissik", also sharp "cheedle" contact call.





**Habitat.** Primarily Chaco woodland and scrub (especially stands of *Trithrinax*), *espinillo* (*Prosopis-Acacia*) savanna, palm savanna (mostly of *Butia yatay*) in E Argentina, also dry subtropical woodland; sometimes frequent edges, gardens and other human-altered habitats, and, in more arid regions, open scrub. Often on ground. Mostly lowlands, to 600 m, but recorded to over 1000 m.

**Food and Feeding.** Diet chiefly arthropods, but some vegetable matter also taken. Apparently eats mostly spiders, but also centipedes (Chilopoda), millipedes (Diplodopa), scorpions, and insects, including locusts (Acrididae).

caterpillars, and larvae of beetles and ant-lions (Myrmelionidae). Spends much time in foraging on ground, where often in small groups with mixed-species flocks of furnariids. Unlike other woodcreepers, quite adept at running on flat surfaces, but also climbs trees, both hitching up vertical trunks and perching crosswise on horizontal branches. Appears to obtain prey chiefly by probing into bromeliads, the ground, and holes amid trees and cacti; most prey seems to be taken from ground. When flushed, often moves with undulating flight to nearby trees, where apparently prefers inclined rather than vertical limbs.

**Breeding.** Nest-building in late Sept/early Oct, eggs in early Oct to Dec, nestlings late Sep to mid-Nov; adult feeding fledged young in mid-Oct in Argentina; birds with enlarged gonads in Oct-Dec in Paraguay and NE Argentina (Corrientes), and female with ovary small in early Jun in C Argentina (La Pampa); moulting in Feb in Paraguay. Nest in cavity, often in tree (including *Erythrina*, *Celtis*, *Prosopis*, *Acacia*, *Melia*, *Schinus*) or in palm, either natural cavity or old hole of woodpecker (Picidae), but occasionally in old nest of Rufous Hornero (*Furnarius rufus*) and even in unused chimney, entrance generally 1.5-2 m above ground, but cavity often 20-50 cm in depth, with internal width 9-15 cm, and opening 6.5-8 cm in diameter; laying on bed of leaves, bark or wood chips, often of eucalyptus (*Eucalyptus*) or *Aspidosperma*. Clutch 3 white eggs, rarely 2, average 31 × 24 mm, laid on consecutive days; incubation period 14 days; nestling period 21 days.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Generally uncommon to fairly common; possibly more abundant in S of range. Rare in E Bolivia, where found only recently; uncommon in Alto Chaco of NW Paraguay, and in Uruguay; uncommon in W Rio Grande do Sul, in Brazil, where first found in 1970. Apparently more common in C Argentina, but rarely reported at edge of range in Buenos Aires region, probably due to lack of suitable habitat. May be only moderately sensitive to human disturbance.

**Bibliography.** Azpiroz (2001), Belton (1973, 1984), Capurro & Bucher (1988), Castellanos (1932), Cory & Hellmayr (1925), Cuello & Gerzenstein (1962), Darrieu & Camperi (1990), Doering (1875), Dunning (1993), Istein (1948), Fraga (2002), Friedmann (1927), Holmberg (1939), Kratter *et al.* (1993), Kudon (1982c), Meyer de Schauensee (1966), Mezquida (2001b), Narosky & Yzurieta (1993), Narosky *et al.* (1983), Navas (1970), Navas & Bô (1986), Olrog (1959a), de la Peña (1977, 1987, 1988, 1997), de la Peña & Rumboll (1998), Pereyra (1937), Pinto (1978), Plotnick & Pergolani de Costa (1955), Ridgely & Tudor (1994), Rodriguez (1985), Short (1975, 1976), Sick (1993), Stotz *et al.* (1996), Vigil (1977), Wetmore (1926), White & Selater (1883).

## Genus *NASICA* Lesson, 1830

### 12. Long-billed Woodcreeper

#### *Nasica longirostris*

**French:** Grimpur nasican

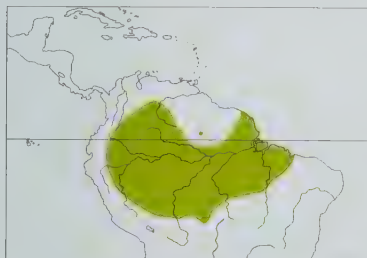
**German:** Elfenbeinschnabel-Baumsteiger

**Spanish:** Trepatroncos Piquilargo

**Taxonomy.** *Dendrocopus longirostris* Vieillot, 1818, Boca do Igarapé Piaba, near Obidos, Pará, Brazil.

May be ancestral to all Dendrocolaptidae with exception of *Drymornis*. Birds from localities S of R Amazon having paler upperparts and more tawny underparts sometimes separated as race *australis*, but differences appear to be attributable to individual variation; by contrast, birds from S bank have significantly longer bill than those from N bank, suggesting that recognition of two races may be warranted; further study needed. Monotypic.

**Distribution.** Amazonia & R Orinoco from E Colombia and S Venezuela S to C Ecuador, NC & E Peru, Amazonian Brazil (E to C Roraima, Amapá and Maranhão, S to N Mato Grosso and S Tocantins) and N Bolivia; apparently absent from Guianan shield with exception of C & E French Guiana.



**Descriptive notes.** 35-36 cm; 78-92 g. Large, highly distinctive woodcreeper with small head and long neck, large but slim body, long tail, and exceptionally long bill only slightly decurved. Blackish-brown crown, nape and auricular region, crown and nape with sharply defined whitish-buff streaking, bold white supercilium complementing clean white throat and foreneck; back, rump, wings and tail bright cinnamon-rufous to rufous-chestnut, tips of outer primaries dark brown; breast and sides boldly marked with broad black-framed white streaks, remaining underparts olive-buff with combination of spotting and barring (pattern

possibly age-dependent); iris yellowish-brown, reddish-brown or dark-brown; bill ivory to light grey or yellowish-grey, with lower mandible often dusky at base; legs and feet grey to brown. Sexes similar. Juvenile is paler below, often with belly faintly barred, also streaks on breast paler and less distinctly fringed. **VOICE.** Song, given at infrequent intervals through day, a series of generally 3-5 long whistles, each lasting c. 1 second and beginning sharp, but trailing off gradually at end, compo-

nent notes variously described as "whoowOOOooo", "twooooooóoo" or "weeeeééééé"; when agitated, series may accelerate, lengthen, and notes become twittery and accented at end, e.g. "ooooo-ip". Calls include loud and relatively harsh, stuttering "chat-ak" or "chat-at-at" and chuckling notes; aggressive in response to imitations of song, often approaching closely while giving harsh calls.

**Habitat.** Primarily flooded forest, swamp-forest and river-edge forest, but regularly frequents adjacent *terra firme* forest and occasionally gallery forest within drier *cerrado* region. Occurs both inside forest and at edges, less frequently around clearings, in second growth, or even in gardens. Rarely far from water, often at lake margins, and resident in small numbers in mature forest on older river islands. Lowlands below 300 m; to 500 m at some sites.

**Food and Feeding.** Diet poorly known; probably mostly arthropods but also known to take small reptiles and amphibians. Stomach contents have included large scorpions and cockroaches (Blattodea), and grasshoppers (Acrididae); also observed to eat a large katydid (Tettigoniidae) 3-4 cm in length. Usually encountered singly, less frequently in twos; often alone, but sometimes with mixed-species flocks. Forages primarily on trunks and large limbs from mid-levels to canopy; sometimes descends to open understorey of seasonally flooded forest when exposed by low water levels. Has been speculated that use of mainly horizontal branches allows this species to have a bill that is very long but also relatively straight. Appears to obtain prey mainly by gleaning and probing in clusters of dense vegetation, especially epiphytes and bromeliads, also in bark crevices, knot-holes and palm fronds; may be specialized on bromeliads. Forages primarily by hitching along canopy limbs and probing into bases of leaves, but sometimes descends to forage in understorey at ant swarms, where prey taken from ground both by pecking and by short sallies; once observed to rummage through leaves on ground. Can be highly aggressive towards other dendrocolaptids, supplanting all but the somewhat larger *Hylexetastes*.

**Breeding.** Nestlings in Feb in E Ecuador; juveniles in Jan and May in upper Orinoco region and in Feb in S Amazonia. One nest was located in cavity 4 m up in small tree in small clearing; nestlings fed by both parents.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Generally uncommon to fairly common throughout its extensive range; apparently rare on river islands and at fringes of range in French Guiana and N Bolivia. Vocalizations relatively conspicuous, and species is often comparatively easy to observe for a woodcreeper. Densities in mid-successional forest at site in SE Peru estimated at 1.5-3 pairs/100 ha, but in nearby late-successional stages only 0.25 pairs/100 ha. Suggested as being highly sensitive to habitat modification and disturbance.

**Bibliography.** Bates & Parker (1998), Bates *et al.* (1989), Borges *et al.* (2001), Brace *et al.* (1997), Camargo (1957), Cherrie (1916a), Cory & Hellmayr (1925), Foster *et al.* (1994), Graves & Zusi (1990), Griscom & Greenway (1937, 1941), Gyldestolpe (1945a, 1945b), Hafler (1988), Hellmayr (1907a, 1907c, 1910), Hilty (2003a), Hilty & Brown (1986), Karr, Robinson *et al.* (1990), Meyer de Schauensee (1950a, 1964, 1966), Parker *et al.* (1982), Penard & Penard (1908-1910), Peres & Whittaker (1991), Phelps & Phelps (1963), Pinto (1938, 1947, 1978), Remsen & Parker (1983), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robbins *et al.* (1991), Robinson (1997), Robinson & Terborgh (1997), Rodner *et al.* (2000), Rosenberg (1990), Schubert *et al.* (1965), Servat (1996), Sick (1993), Sillett *et al.* (1997), Sneath (1913, 1914), Stotz *et al.* (1996), Taczanowski (1884), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1994), Tostain *et al.* (1992), Willis (1977, 1983d, 1992c).

## Genus *DENDREXETASTES* Eyton, 1851

### 13. Cinnamon-throated Woodcreeper

#### *Dendrexetastes rufigula*

**French:** Grimpur à collier **German:** Perlhals-Baumsteiger **Spanish:** Trepatroncos Gorgicanelo  
**Other common names:** Streak-throated Woodcreeper/Woodhewer

**Taxonomy.** *Dendrocolaptes (orthocolaptes) rufigula* Lesson, 1844, "Cayenne".

Close relationship to *Campylorhamphus* proposed in one study. Race *devillei* considered possibly a separate species by some authors, but vocalizations like those of other races. Four subspecies recognized.

**Subspecies and Distribution.**

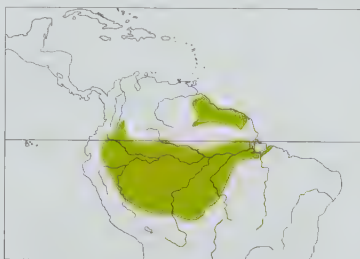
*D. r. devillei* (Lafresnaye, 1850) - W Amazonia from C Colombia, E Ecuador and E Peru E to W Brazil (E to R Madeira, probably also to R Negro) and S to N Bolivia.

*D. r. rufigula* (Lesson, 1844) - NE Amazonia, N bank of Amazon, in E Venezuela (NE Bolivar, S Delta Amacuro), the Guianas and N Brazil (N Roraima, and R Negro E to Amapá).

*D. r. monilliger* J. T. Zimmer, 1934 - Amazonian Brazil S of Amazon (from R Madeira E to lower R Tocantins, S to Mato Grosso).

*D. r. paraensis* Lorenz, 1895 - Amazonian Brazil S of Amazon (E of R Tocantins in E Pará).

**Descriptive notes.** 22.5-27 cm; male 64-74 g, female 66-77 g. Relatively large, heavy-bodied woodcreeper with relatively short wings, short stout bill with slightly hooked tip. Nominant race is largely medium-brown above, paler and more cinnamon on crown, rufous-chestnut wings, rump and tail; narrow whitish streaks at junction of nape and back; paler below, more cinnamon-brown, throat brightest, approaching rusty buff, broad, conspicuous, black-bordered whitish streaks across breast, sometimes weak barring on lower belly and, especially, undertail-coverts; iris red to light brown; bill horn-grey, bluish-horn, or brownish to dull greenish-yellow; legs and feet slate-grey, greenish-grey, bluish-black or brown. Distinguished from similarly sized *Dendrocolaptes certhia* by greenish to horn-coloured bill, little or no barring, streaking across breast and, in nominate, neck. Female like male, possibly smaller on average. Juvenile undescribed. Race *paraensis* most similar to nominate, but with obvious white supercilium, larger bill, more rounded streaking on breast; *devillei* has weaker pattern, usually with





unmarked belly and only faint, buffy shaft streaks on breast and sides, not continuing around hindneck; *moniliger* is duller and less rufescent overall than previous, but with streaks on breast and neck slightly bolder and with more obvious dark borders. **Voice.** Song, mostly at dawn and dusk, often in near darkness, a rapid grating trill that initially accelerates but then slows near end, sometimes sputtering at first, but almost invariably ending in a characteristic “tchew” or “eernh”. Despite geographic variation in plumage patterns, song varies little throughout Amazonia but possibly more so at N edge of range, where it does not slow as obviously at end.

**Habitat.** Humid Amazonian forest, both *terra firme* and flooded; forested sand ridges and savanna forest in the Guianas. Largely at edges, in mid- to late-successional growth, and in taller second growth, often near water; less frequently in canopy of primary forest; especially partial to palm trees. One of few woodcreepers occurring on Amazon river islands, where it occupies both older forests and those dominated by *Cecropia*. Primarily lowlands below 500 m; occasionally to 950 m on E slopes of Andes, and recorded once at 1200 m in Ecuador.

**Food and Feeding.** Diet poorly known; probably largely arthropods, but often observed pecking at clusters of fruit. Stomach contents have included beetles and locusts (Acrididae). Usually forages from mid-levels to canopy, often alone, but also with mixed-species, canopy flocks; usually encountered singly, less frequently in twos. Forages not only on large trunks and limbs in mid-levels of trees, but also in foliage of outer limbs of canopy, and especially in palm fronds. Appears to obtain prey mostly by gleaning and by probing into and rummaging among clusters of dense vegetation, including both live and dead leaves, epiphytes and palm fronds; nearly 25% of observations in one study involved foraging in dead palm leaflets or clusters of dead leaves amid live palms.

**Breeding.** Breeds mainly during the short dry season in the Guianas; flying young being fed in Oct in French Guiana. Nests in hollow tree, abandoned woodpecker (Picidae) hole or thatched roof; pair seen to bring dead leaves to a cavity 20 m up at base of fronds of the palm *Jessenia bataua* in Aug–Sept in French Guiana, but subsequent inspection revealed no further activity; average territory size 14 ha in late-successional forest in SE Peru. Clutch 2–3 white eggs, 28.5 × 22 mm.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to common, but often local, throughout its range. Both difficult to observe and rarely captured in mist-nets, thus best censused by using its distinctive song. Densities in mid-successional growth along a river in SE Peru estimated at 5–6.5 pairs/100 ha, but in nearby late-successional forest only 3 pairs/100 ha. Suggested as being highly sensitive to habitat modification, even disappearing from selectively logged forest at one site.

**Bibliography.** Bates & Parker (1998), Bierregaard (1988), Bond (1953), Borges *et al.* (2001), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1925), Dubs (1992), Foster *et al.* (1994), Gyldestolpe (1945a, 1945b, 1951), Haffer (1988), Haverschmidt (1948), Haverschmidt & Mees (1994), Hellmayr (1907c, 1910), Hilty (1999, 2003a), Hilty & Brown (1986), Jullien & Thiollay (1998), Karr, Robinson *et al.* (1990), LeCroy & Sloss (2000), Menegaux (1904), Menegaux & Hellmayr (1906a), Meyer de Schauensee (1945, 1950a, 1964, 1966), Moskovits *et al.* (1985), Munn (1985), Munn & Terborgh (1979), Novaes (1967), O'Neill & Pearson (1974), Parker & Bailey (1991), Parker *et al.* (1982), Pearson (1971, 1977b), Penard & Penard (1908–1910), Pinto (1938, 1978), Pitman *et al.* (2002), Ribon & Pacheco (2002), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robbins *et al.* (1991), Robinson & Terborgh (1997), Rosenberg, G.H. (1990), Rosenberg, K.V. (1997), Servat (1996), Sick (1993), Snethlage (1914), Snyder (1966), Stotz (1993), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Taczanowski (1884), Terborgh, Fitzpatrick & Immons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1990, 1992, 1994), Thiollay & Jullien (1998), Tostain (2002b), Tostain *et al.* (1992), Willis (1977, 1982c, 1986, 1992c), Zimmer (1934b).

## Genus *HYLEXETASTES* P. L. Sclater, 1889

### 14. Red-billed Woodcreeper

#### *Hylexetastes perrotii*

**French:** Grimpard de Perrot **German:** Weißbart-Baumsteiger **Spanish:** Trepatroncos Piquirrojo  
**Other common names:** Brigida's Woodcreeper (*brigidai*); Uniform Woodcreeper (*uniformis*)

**Taxonomy.** *Dendrocolaptes Perrotii* Lafresnaye, 1844. Colombia; error = “Cayenne”.

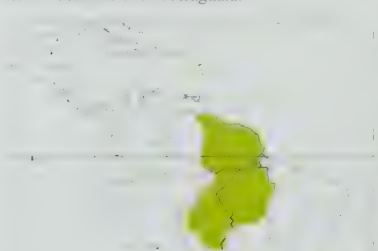
Close to and possibly conspecific with *H. stresemanni*, having similarities in voice and morphology; race *insignis* of latter has characters suggesting possible intergradation between the two. Race *uniformis* treated by some authors as a separate species on basis of differences in plumage and, to lesser extent, body size, despite vocal similarity and a lack of behavioral data; *brigidai* recently described as a full species on basis of diagnostic but relatively subtle plumage characters, but is similar structurally and vocally to *uniformis*; intermediates not known, but total number of specimens small. Morphological and vocal similarities to nominate (songs possibly not identical), however, suggest that both are better considered races of present species. Three subspecies recognized.

#### **Subspecies and Distribution.**

*H. p. perrotii* (Lafresnaye, 1844) – NE Amazonia, N of Amazon, in E Venezuela (R Yuruán, in NE Bolívar), the Guianas and N Brazil (lower R Negro and C Roraima E to Amapá).

*H. p. uniformis* Hellmayr, 1909 – S Amazonia, S of Amazon, in Brazil (R Madeira and tributaries E to upper R Xingu, S to SW Mato Grosso) and NE Bolivia.

*H. p. brigidai* da Silva *et al.*, 1995 – SE Amazonian Brazil, S of Amazon, in Pará from R Xingu E to R Tocantins and R Araguaia.



**Descriptive notes.** 25–30 cm; male 112–137.5 g, female 110–145 g (*perrotii*), male 86.5–121 g, female 95–118 g (*uniformis* and *brigidai* combined). Large, heavy-bodied woodcreeper with large head, short but massive bill, heavy legs and feet; relatively short tail often excessively worn, possibly a result of foraging close to ground. Nominative race has whitish lores, frosty white moustachial stripe from lores back across head just below auriculars, olive-brown throat with whitish to buffy centre; otherwise largely uniform, smoky brown to olive-brown above (including wing-coverts), with remiges, rump and tail bright rufous to rufous-chestnut, primary tips dusky; breast greyish-brown, belly buffy brown, undertail-coverts tending to be more rufescent; about half of individuals have indistinct dusky grey bars on belly

and undertail-coverts; iris brown to reddish-brown, even red; bill wine-red to brownish; legs and feet shades of green or olive, often with brown or grey intermixed. Distinguished from *H. stresemanni* by more weakly barred underparts, pale moustachial stripe; from somewhat similar *Dendrocolaptes certhia* mainly by bold facial markings and noticeably stouter body. Sexes similar. Juvenile is similar to adult, but crown weakly streaked, on average more heavily barred and possibly more rufescent below, eyes dark grey, shorter bill dusky to blackish, sometimes with pale lower mandible. Races *uniformis* and *brigidai* are on average smaller in all dimensions than nominate, but limited overlap: *uniformis* is uniformly brown almost throughout, lacks paler throat and whitish facial markings, belly sometimes finely and indistinctly barred; *brigidai* is somewhat more boldly patterned than *uniformis* (tending towards nominate), has more conspicuous and darker barring on belly and underwing-coverts, contrasting pale grey lores, paler and more yellowish chin and throat. **Voice.** Song, given almost exclusively at first or last light from canopy of tall tree near centre of territory, but occasionally during day in territorial interactions, a loud, ringing series of 2–6 whistles each c. 1 second long and almost disyllabic, first part longer and sometimes lower in pitch, second higher and more emphasized, notes described as “wreccccéé” or “erweeék” and song as “kyuu-hee, kyuu-hee...” or “hooooooreet, hoooooreet, hoooreet, hoooreet”, series often repeated only few times; heard at close range, song less noticeably disyllabic and not descending like song of *Xiphocolaptes promeropirhynchus*; both members of pair apparently sing, but at slightly different pitch. Songs of *uniformis* and *brigidai* similar to that of nominate, but possibly not identical. Various calls described as snarling “screee-wip”, “nyeah” and “nyip, nyeeek, nyeeek, weewewewiep”, the last in response to tape playback of song; also growling series of “cag” notes, faint grunting “whinh, whaiih, whaiih” directed at nearby *Xiphocolaptes*, and faint disyllabic whistles by dependent young. Quality of calls, and even songs, similar to that of *Xiphocolaptes*.

**Habitat.** Primarily humid *terra firme* forest in Amazonian lowlands and hilly Guianan interior; sometimes occurs in gallery or seasonally flooded forests or those growing on sandy soils; also encountered rarely in savanna forest in Surinam, and in semi-deciduous woodland on upper R Xingu (Brazil). Mainly in interior of tall primary forest, but sometimes at edges and even in selectively cut forest; avoids younger second growth, but uses older second growth on occasion. Largely restricted to lowlands, but ascends to 600 m in Serra dos Carajás (Pará, in Brazil).

**Food and Feeding.** Diet mostly small arthropods; larger items, including small vertebrates, sometimes taken. Prey often quite small (including ant and wasp larvae), but this may reflect availability rather than preference; small prey sometimes left for other species. Stomach contents have included spiders, beetles, and Hymenoptera (both ants and wasps). Centipedes (Chilopoda), spiders, scorpions and katyids (Tettigoniidae) often taken over army ants, cockroaches (Blattodea) only rarely so; both frogs and snakes recorded as being eaten, and winged ants taken during hatches. Forages singly and in pairs. Regularly associates both with army-ant swarms and with mixed-species flocks. When foraging over ants, uses near-vertical trunks of medium to large size (5–50 cm), generally perching either below 2 m (often less than 1 m) or at 10–15 m above ground; most prey taken in clumsy sallies to ground, but significant percentage gleaned from trunks, limbs or foliage. Away from ant swarms, often forages among mixed-species flocks in middle to upper levels of forest, on trunks of large trees, where gleaning or pecking probably more important than sallying; occasionally seen to follow flocks of Red-throated Caracaras (*Daptrius americanus*), presumably for prey they flush. Sometimes digs in rotten wood, termite nests and, occasionally, in epiphytes or debris, for which massive bill seems well adapted. Generally looks outwards when hitching or perched, rather than peering inwards at trunks as do *Xiphorhynchus*. Despite clumsy movements and often sluggish behaviour, is dominant over all other dendrocolaptids and all thamnophilid antbirds, probably because of its large size; forages low in best positions over sides and front edge of ant swarms, and regularly chases and supplants conspecific and other woodcreepers over swarms, excluding *Dendrocolaptes picumnus* at one site, and supplanting species as large as *Xiphocolaptes promeropirhynchus*; only one observation of displacement by another species, a forest-falcon (*Micrastur*).

**Breeding.** Little known; eggs and most aspects of breeding biology undescribed. Birds with gonads greatly enlarged in early Oct and moderately enlarged in late Mar in Surinam, and with moderately enlarged gonads in late Jun in S Pará (Brazil); probably breeds in dry season, e.g. Jun–Sept near Manaus (Brazil), where single dependent fledglings seen beginning Aug to Oct; carrying bark chips to cavities in both late Feb and mid-Aug, and apparently brooding at former nest in mid-Mar, in French Guiana; begging juvenile in early Feb and immatures from mid-Jan to late Jun in S Amazonia. Nests observed during construction were in cavities near tops of large stumps. Fledglings may remain with parents until May of following year (Manaus); fledged young of year dominant over one parent (apparently male) but dominated by other (apparently female). Has been speculated that only 1 egg laid, and that breeding success low.

#### **Movements.** Resident.

**Status and Conservation.** Not globally threatened. Status poorly known; probably uncommon to rare throughout its range, and apparently present at most sites in low densities and on large, mutually exclusive territories. In Brazil, rare to uncommon at well-worked sites near Alta Floresta (Mato Grosso), at Tapajós National Park (Pará), in reserves N of Manaus, in N Roraima, and at sites in Amapá, but surprisingly common at Caxiuanã National Forest (Pará); rare to uncommon in the Guianas, and known in Venezuela from only two records. Densities at site near Manaus estimated at 3–5 birds/100 ha. Appears to be highly sensitive to habitat modification, as evidenced by observations of its abandoning ant swarms that move into second growth, and its disappearance from both selectively logged sites and small forest fragments after isolation; reappearance at an isolated fragment indicates, however, that it will cross areas of unsuitable habitat to locate active ant swarms. An indicator species for tropical lowland evergreen forest in both N & S Amazonia.

**Bibliography.** Anon. (2003b, 2003c), Bangs (1930), Bates & Parker (1998), Bates *et al.* (1989), Bierregaard (1988), Bierregaard & Lovejoy (1989), Blake (1963), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1925), Dubs (1992), Fry (1970), Gyldestolpe (1951), Haffer (1992), Haverschmidt (1957), Haverschmidt & Mees (1994), Hellmayr (1909a, 1910), Hilty (2003a), Jullien & Thiollay (1998), Karr, Robinson *et al.* (1990), LeCroy & Sloss (2000), Meyer de Schauensee (1966), Meyer de Schauensee & Phelps (1963), Novaes & Lima (1990), Oniki & Willis (1972, 1982), Penard & Penard (1908–1910), Phelps & Phelps (1963), Pinto (1938, 1978), Ridgely & Tudor (1994), Schubart *et al.* (1965), Sick (1993), da Silva & Oniki (1988), da Silva, Lima & Marceliano (1990), da Silva, Novaes & Oren (1995), Snethlage (1914, 1926), Snyder (1966), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Stouffer & Bierregaard (1995), Thiollay (1990, 1992, 1994), Thiollay & Jullien (1998), Tostain (2002b), Tostain *et al.* (1992), Willis (1977, 1982c), Willis & Oniki (1978, 1988c), Zimmer, Parker *et al.* (1997).

### 15. Bar-bellied Woodcreeper

#### *Hylexetastes stresemanni*

**French:** Grimpard de Stresemann **Spanish:** Trepatroncos de Stresemann  
**German:** Wellenbauch-Baumsteiger

**Taxonomy.** *Hylexetastes stresemanni* Snethlage, 1925, Acajutuba, lower Rio Negro, Brazil.



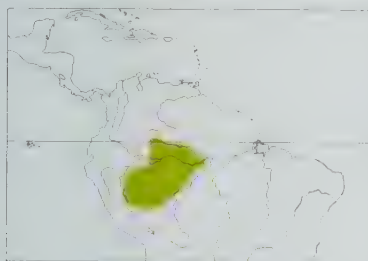
Close to and possibly conspecific with *H. perrotii*, having similarities in voice and morphology; characters of race *insignis* suggest possible intergradation between the two species. Has apparently hybridized intergenerically with *Dendrocolaptes picumnus* in W Brazil, one of few cases of hybridization in suboscines. Three subspecies recognized.

**Subspecies and Distribution.**

*H. s. insignis* J. T. Zimmer, 1934 - extreme NW corner of Amazonian Brazil on N bank of R Uaupés; sight records from adjacent Colombia (Vaupés) require verification.

*H. s. stresemanni* Sneathlage, 1925 - NW Amazonia, in Brazil from lower R Negro S to R Solimões (W limit unknown).

*H. s. undulatus* Todd, 1925 - SW Amazonia, S of Amazon, in E Peru (upper R Ucayali), N Bolivia (Pando) and NW Brazil (E to at least R Purús, probably to R Madeira).



**Descriptive notes.** 28-29 cm; male 114-125 g, female 102 g. Large, heavy-bodied woodcreeper with large head, short but massive bill, heavy legs and feet, relatively short tail. Nominate race has head, back and wing-coverts brown to olive-brown, pale shaft streaks on forehead, pale region in lores and under eye but face otherwise plain; lower back, remiges and tail rufous-chestnut, primary tips darker; throat whitish with bold dark streaking, especially at lower edge; breast olive with black-bordered streaks of whitish to yellowish-white, blending below to buffy; lower breast unmarked but belly and undertail coverts with narrow but well-defined blackish bars; iris

red to red-brown or bright brown; bill laterally compressed, blunt-tipped, dark reddish to reddish-brown; legs and feet greyish-green to dusky. Distinguished from *H. perrotii* by more heavily barred underparts, plainer face; from similar *Dendrocolaptes picumnus* by larger size, heavier body, plain face and upperparts, more massive, reddish bill. Sexes similar. Juvenile has more rufous back than adult, dark spots along edges of throat and breast feathers produce apparent mix of streaking and barring, also more brownish and often noticeably shorter bill. Races differ mainly in subtle variations of colour: *insignis* is more olivaceous above than nominate, lacks forehead streaks and dark borders of breast streaks, and has more obvious moustachial stripe, weaker barring below, shorter bill; *undulatus*

is larger, also lacks streaking on forehead, and is slightly more olivaceous, less rufescent, below than nominate, with barring on belly bolder and better defined. **VOICE.** Song, given almost exclusively at first light, a loud and somewhat shrill series of 4-6 almost disyllabic "shu-reet" whistles roughly on same pitch, similar to that of *H. perrotii* but individual notes described as being shorter and more clipped; heard at close range, whistles less noticeably disyllabic, and song not descending like that of *Xiphocolaptes promeropirhynchus*.

**Habitat.** Humid forest in Amazonian lowlands, both *terra firme* and in floodplains. Generally in interior of primary forest, but probably visits edges, and possibly also older second growth on occasion. Lowlands, to c. 300 m.

**Food and Feeding.** Little known; brief observations in W Brazil suggest that diet and foraging behaviour over ants similar to those of *H. perrotii*. Tiny insects observed being eaten, but larger arthropods probably also taken when available; stomach contents comprised insects. In addition to occurrence at army-ant swarms, probably associates at least occasionally with mixed-species flocks. Forages primarily from understorey to subcanopy, probably lower when over ants than when away from them. From low perches, often on thick, vertical trunks, one bird sallied over ants to peck prey from leaves or trunks; occasionally perches crosswise on slim, horizontal stems. Quite shy and difficult to approach, even over ants.

**Breeding.** Nothing published on any aspect of breeding biology.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. A rarely seen and little-known species; probably uncommon to rare, but occurs in one of the regions of Amazonia that is best-preserved and least known ornithologically. Limited singing for brief periods, largely at dawn and dusk, further complicates censusing. Only 1 pair encountered in over 50 days in field at one Bolivian site, suggesting either that species has very large territories or that its habitat requirements are quite specific: congener *H. perrotii* generally found in very low densities. Said to be uncommon at upper R Urucu, in Brazil, but believed to be rare at most sites; although infrequently encountered, occurs in the large (over 2,000,000 ha) Jaú National Park. Fewer than ten records at well-worked sites in Madre de Dios, in Peru. Believed to be highly sensitive to human disturbance. Possibly merits reassessment of conservation status as Near-threatened, or even Vulnerable.

**Bibliography.** Borges *et al.* (2001), Cory & Hellmayr (1925), Dunajewski (1939), Gonzaga (1989), Gyldenstolpe (1951), Haffer (1992), Hilty & Brown (1986), LeCroy & Sloss (2000), Lloyd & Marin (2000), Meyer de Schauensee (1966), Parker & Remsen (1987), Parker *et al.* (1982), Peres & Whittaker (1991), Pinto (1938, 1978), Ridgely & Tudor (1994), Sick (1993), Sneathlage (1925), Stotz *et al.* (1996), Willis (1982c), Zimmer (1934c).







# Genus *XIPHOCOLAPTES* Lesson, 1840

## 16. Strong-billed Woodcreeper

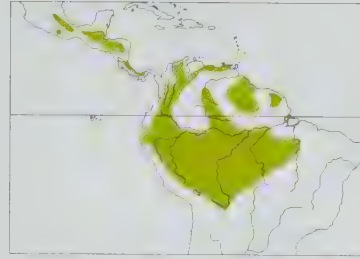
### *Xiphocolaptes promeropirhynchus*

**French:** Grimpar géant **German:** Starkschnabel-Baumsteiger **Spanish:** Trepatroncos Picofuerte  
**Other common names:** Giant Woodcreeper; Great-billed/Orinoco/Rusty-breasted Woodcreeper ("orenocensis group")

**Taxonomy.** *Dendrocolaptes promeropirhynchus* Lesson, 1840, no locality = "Bogotá", Colombia. Sometimes considered to form a superspecies with *X. albicollis*. Races usually divided into three groups, treated as separate species by some authors: "emigrans group" (Central America), "promeropirhynchus group" (mountains of W & N South America), and "orenocensis group" (primarily Amazonian lowlands). Populations in mountains of N South America may be closer to those in Amazonian lowlands than to those in Peruvian and Bolivian Andes; affinities of race *crassirostris* problematic, possibly allied with "orenocensis group" but occurring W of Andes. Assessment of geographical variation complicated by marked individual variation within taxa in almost all geographically variable characters. Race *ignotus* sometimes merged with nominate; *rostratus* possibly a junior synonym of *fortis*; *virgatus* poorly defined, and intergrades with nominate on E slope of C Colombian Andes; and *sanctaemartae* very similar to *procerus*; racial identity of birds in Guianan lowlands uncertain, tentatively placed with *tenebrosus*. Thorough taxonomic revision needed. If by nothing else, Central American, Andean and Amazonian populations united by vocalizations that are remarkably similar, given degree of morphological differentiation. Published records from N Argentina apparently referable to misidentified *Dendrocolaptes picumnus*. Twenty-five subspecies recognized.

#### Subspecies and Distribution.

*X. p. omitemensis* Nelson, 1903 - subtropical zone in SW Mexico (Sierra Madre del Sur, in C Guerrero).  
*X. p. sclateri* Ridgway, 1890 - E & SE Mexico (SE San Luis Potosí, Hidalgo, W Veracruz, N Oaxaca).  
*X. p. emigrans* P. L. Sclater & Salvin, 1859 - mountains (rarely lowlands) from S Mexico (Chiapas), N Guatemala, W Belize and El Salvador E to NC Nicaragua.  
*X. p. costaricensis* Ridgway, 1889 - highlands of C Costa Rica and SW Panama (Chiriquí).  
*X. p. panamensis* Griscom, 1927 - mountains on Pacific slope of S Panama (Veraguas, possibly also Coclé).  
*X. p. sanctaemartae* Hellmayr, 1925 - N Colombia (Santa Marta Mts).  
*X. p. rostratus* Todd, 1917 - N Colombian lowlands in Córdoba and Bolívar (Sinú Valley E to Serranía San Lucas and Magdalena Valley).  
*X. p. fortis* Heine, 1860 - range unknown, likely either N Colombia or Venezuela (known only from unique type, no locality given).  
*X. p. virgatus* Ridgway, 1890 - upper tropical to temperate zones of W slope of C Colombian Andes, also on E slope (E to R Magdalena).  
*X. p. promeropirhynchus* (Lesson, 1840) - subtropical and temperate zones in N Colombia (W slope of E Andes E of R Magdalena) and W Venezuela (Perijá Mts, Trujillo, Mérida, Táchira).  
*X. p. procerus* Cabanis & Heine, 1859 - tropical and subtropical zones in mountains of N & C Venezuela (W Zulía, N Mérida and NW Lara E to Sucre, S to N Monagas and E Guárico).  
*X. p. macarenae* Blake, 1959 - Macarena Mts and E foothills of C Colombian Andes (S Meta, Caquetá).  
*X. p. neblinae* Phelps, Sr. & Phelps, Jr., 1955 - subtropical zone on Cerro de la Neblina, in S Venezuela (S Amazonas); possibly also adjacent N Brazil.  
*X. p. tenebrosus* J. T. Zimmer & Phelps, Sr., 1948 - upper tropical zone on tepuis of SE Venezuela (Chimantá-tepui and Mt Roraima, in SE Bolívar) and adjacent Guyana (Acary Mts), probably also adjacent tepuis of N Brazil; also lowlands of the Guianas (except Surinam).  
*X. p. ignotus* Ridgway, 1890 - subtropical and temperate zones of Ecuadorian Andes.  
*X. p. crassirostris* Taczanowski & Berlepsch, 1885 - subtropical zone in Andean foothills in SW Ecuador (W El Oro, Loja) and NW Peru (Tumbes, Piura).  
*X. p. compressirostris* Taczanowski, 1882 - temperate zone of N Peruvian Andes (Amazonas, Cajamarca, San Martín).  
*X. p. phaeopygus* Berlepsch & Stolzmann, 1896 - temperate zone of C Peruvian Andes (Junín).  
*X. p. lineatocephalus* (G. R. Gray, 1847) - subtropical and temperate zones of Andes from SE Peru (Cuzco) S to NW & C Bolivia (La Paz, Cochabamba, Santa Cruz).  
*X. p. solivagus* Bond, 1950 - upper tropical zone on E slope of E Peruvian Cordillera (Chanchamayo region, in Junín, probably also N to Huánuco).  
*X. p. orenocensis* Berlepsch & Hartert, 1902 - NW Amazonian lowlands, N of Amazon, from C Colombia and S Venezuela S to NE Ecuador, NE Peru and NW Brazil (E to R Negro).  
*X. p. berlepschi* Sneath, 1908 - Amazonian lowlands of W Brazil S of R Solimões (E to R Madeira); W limit of range unclear.  
*X. p. paraensis* Pinto, 1945 - C Amazonian Brazil, S of Amazon, from R Madeira E to R Xingu, S to N Mato Grosso (Alta Floresta).  
*X. p. carajensis* da Silva et al., 2002 - SE Amazonian Brazil, S of Amazon, from R Xingu E to R Tocantins and R Araguaia, in Pará.  
*X. p. obsoletus* Todd, 1917 - lowlands of N & E Bolivia (La Paz E to Santa Cruz).  
**Descriptive notes.** 26-35 cm; male 111-169 g, female 102-142 g. Heaviest woodcreeper, with stocky build, medium-length tail, relatively long, decurved bill stout but laterally compressed. Nominate race has buffy lores, supercilium and moustachial stripe, contrasting dusky postocular and malar stripes; dark brown crown and nape blending to brown on back, scapulars and wing-coverts, buff streaking on crown and nape becoming narrower and less distinct on upper back; lower back russet, darkening to rufous-chestnut on rump; inner webs of remiges rufous-chestnut, outer webs tawny-brown, tips dusky; tail dark chestnut, shafts brighter; throat buffy and largely unmarked; breast and sides brownish with narrow buffy streaks that continue indistinctly onto belly, belly and undertail-coverts tawny-cinnamon with fine dark spots or bars; underwing-coverts tawny-ochraceous with black spotting; iris dark brown to amber or red; bill blackish-horn; legs and feet bluish-grey, greenish or greyish-black. Sexes similar. Juvenile has shorter bill, ochraceous tips to wing-coverts, deeper overall coloration, and pale streaks on crown, throat and breast both wider and bordered by dusky spots (producing barred appearance). Races vary mainly in size, general coloration, bill size and shape, bill colour (mostly paler than nominate and often with tip or base contrasting darker), character of streaking on breast and crown, extent of barring on belly. Within "promeropirhynchus group" (including *virgatus*, *sanctaemartae*, *procerus*, *macarenae*, *ignotus*, *fortis*, *rostratus*, *compressirostris*, *phaeopygus*, *lineatocephalus* and, possibly, *tenebrosus* and *neblinae*) races differ largely in size, bill shape and colour, overall coloration, throat pattern, width of streaking on crown and breast, and extent of streaking on back and spotting on underparts. Race *virgatus* closely similar to nominate but possibly larger and darker on average; races *sanctaemartae*, *procerus* and *macarenae* have streaking on crown finer and little or none extending onto back; *sanctaemartae* and *procerus* have throat streaked, streaking on breast narrower and more limited, belly unbanded; *macarenae* similar but throat paler and upperparts darker; *ignotus* and *fortis* again similar, but with bill heavier, overall coloration more rufescent, and throat mostly unstreaked; *rostratus* nearly inseparable from *fortis* and differing from *ignotus* only by longer bill. Birds from Peruvian Andes (*compressirostris* and *phaeopygus*) more olivaceous, with streaking on throat heavier, streaking on crown finer, back nearly unstreaked and concolorous with rump, and bill shorter; *phaeopygus* differs primarily in its near lack of crown streaking. Race *lineatocephalus* similar to *compressirostris* and *phaeopygus*, but overall coloration more rufous, rump chestnut, crown darker and distinctly streaked. Both *tenebrosus* and *neblinae* most similar to "orenocensis group", but with upperparts darker, throat more heavily streaked; *tenebrosus* differs from *neblinae* by shorter, straighter bill. Central American birds "emigrans group" smaller in size, overall coloration plainer, spotting on belly weak and streaks on head, back, and breast faint and narrow; *emigrans* is pale overall and with malar-stripe weak; *sclateri* is similar to *emigrans* but crown and malar-stripe blacker, wings duller, and streaking somewhat stronger; other Central American races (*omitemensis*, *costaricensis*, *panamensis*) differ from previous two in size, bill length and shape, overall coloration, and colour and degree of streaking on crown. Amazonian birds "orenocensis group" (including races *berlepschi*, *paraensis*, *carajensis*, *obsoletus* and *solivagus*) are larger and generally more rufescent overall (especially below), with crown blackish and boldly streaked, moustachial-stripe indistinct or lacking and, in most races, bill longer, heavier and mostly pale; races *orenocensis* and *berlepschi* weakly barred below and weakly streaked above; *berlepschi* more rufescent below than *orenocensis* and with belly more weakly spotted; *paraensis* similar to *berlepschi* but crown nearly black, and streaking on back and barring on belly both relatively bold; *carajensis* similar to *paraensis* but size smaller, underparts slightly paler, and streaking, both above and below, narrower but also denser, that on back also less extensive; races *obsoletus* and *solivagus* differ by smaller bill and in overall coloration; *solivagus* is paler and less reddish than *obsoletus*. Race *crassirostris* most similar to "orenocensis group" due to dark crown, but size smaller, striping on face bold and throat unstreaked, whitish. **VOICE.** Song, often given only a few times at dawn and dusk (from near top of large tree), a loud, ringing series of 3-10 disyllabic whistles, each lower in pitch than preceding one, described as "ooWackee, ooWackee, ooWackee, ooWackee, ooWackee, Wackity, Wackity, Wackity, Wackity, Wackity, Wack". "chu'ik chu'ik chu'ik..." or "pt-teeu, pt-teeu, pt-teeu, pt-teeu, pt-teuu", most like that of *X. albicollis*; at distance first note of each couplet often inaudible, resulting in descending series of single whistles much like song of *Hylexetastes*; song similar throughout range, but cadence in songs of Amazonian birds may average faster than in other populations. Calls include "yip, yip, yip", soft cat-like "meow", "cooo-WEEW"; also snarled "trieh-chk!" or "pahhh-JEEP" alarm, similar to comparable call of *X. albicollis*.  
**Habitat.** Variety of forested habitats from tropical lowlands to subtropical and lower temperate zones of mountains. Most races in either lowland or montane habitats, but not both; some occur in close geographical proximity but separated altitudinally. Primarily montane in Central America, N & C Andes (except lowland race *rostratus*), coastal ranges of Venezuela and tepuis, but "orenocensis group" largely restricted to Amazonian lowlands. Most montane taxa frequent humid evergreen forest and cloudforest, but others in dry forest; N races primarily in arid oak (*Quercus*), pine (*Pinus*) and pine-oak woodlands in mountains, occasionally also in both rainforest and pine ridges of lowlands. Amazonian races primarily in humid forests, primarily in *terra firme* and on floodplains, less frequently flooded forest and gallery forest. Frequents mainly interior of mature forest, regularly also more open forest, older second growth, forest edge; rarely, visits forest fragments, adjacent plantations or younger second growth. Mostly lowlands to c. 900 m in Amazonia, with montane forms generally at 1500-2800 m (rarely down to 700 m, or up to 3200 m); 1500-3500 m in Mexico, and generally above 1200 m in Guatemala and Honduras (occasionally down to 600 m in Honduras in non-breeding season, and throughout year in lowlands of Belize and Guatemala); 500-1700 m in Costa Rica and Panama; 100-3000 m (mostly above 1500 m) in Colombia; 20-2800 m (generally above 400 m) in N & W Venezuela, lowlands to 1800 m in S and in Guyana; mostly 1000-3000 m (locally to 3200 m) in Ecuador, but to c. 600 m in E lowlands; lowlands to 2850 m on E slope of Peruvian Andes.  
**Food and Feeding.** Appears to be mainly insectivorous, but small vertebrates also taken. Both a grasshopper (Acrididae) and a cricket (Gryllidae) observed being taken over ants; only report of vertebrate prey involved a small frog (*Hyla myotympanum*). Most prey appear to be quite small (mean 0.5 cm in one study), but items larger than 5 cm taken on occasion. Forages from understorey to subcanopy, less often in canopy. Usually encountered singly or in pairs, sometimes in family groups; seems generally to forage alone, sometimes with mixed-species flocks, and occasionally in association with swarms of army ants (primarily *Eciton burckellii*, also *Labidus praedator*). Only 5% of observations at site in SE Peru involved birds with understorey flocks, but seems to prefer flocks led by *Thamnomanes* antshrikes. Generally sluggish and rather inconspicuous, but sometimes quite wary, and often flying long distances between perches. Appears to forage largely by digging into dead wood or leaf litter with powerful bill; also creeps up large trunks and limbs while pecking at or probing into epiphytes, bark crevices, both live foliage and dead leaves, lichen-covered branches, or termite (Isoptera) nests. Montane birds seem especially fond of foraging among bromeliads and other epiphytes, and may specialize on them. One individual collected from arboreal ant nest. Over 95% of foraging attempts in one study represented picking, with less than 5% involving sallies. Over ant swarms usually forages low in undergrowth, mostly from vertical or slightly inclined trunks 6-25 cm in diameter, but also hops on ground or over fallen logs, digging into rotten wood or leaves. Activity over ants concentrated within 1 m of ground (but sometimes to 10 m), with pecking at items or sallying short distances to capture prey; foraging by one bird involved 3 pecks to ground, 1 to debris and 1 to trunk, and 6 sallies to ground and 1 to debris. Aggressive encounters over ant swarms have included displacing





*Dendrocolaptes picumnus* and being supplanted by *Hylexetastes perrotii*; interactions with smaller *X. guttatus* have gone both ways.

**Breeding.** Birds in breeding condition in late Mar to early May in Mexico, Belize, NW Colombia and S Venezuela, and in early Oct in Mato Grosso (Brazil); male in late Dec in SW Mexico and two in early Mar in Guatemala nearly in breeding condition, but one in Aug in Guatemala had reduced (probably regressing) gonads and others in late Jul to late Aug in S Amazonian Brazil in non-breeding condition; a bird seen carrying dead leaf, presumably to nest, in late Feb in SE Colombia; fledged young in Jan in N Bolivia, and juveniles in Feb in N Colombia and S Venezuela, and Aug in Costa Rica. Nest and eggs apparently not documented.

**Movements.** Probably resident throughout most of range; some birds in N of range may move downslope into adjacent lowlands during non-breeding season. Only a casual visitor at well-worked Monteverde Forest Reserve, in Costa Rica, suggesting some movement of local populations.

**Status and Conservation.** Not globally threatened. Uncommon but local throughout most of range. Seemingly more common in mountains of N Central America and Santa Marta region (Colombia), and at some lowland Amazonian sites; relatively rare both on Pacific slope and in Caribbean lowlands of N Central America (El Salvador, N Guatemala and Belize), throughout Costa Rica and Panama, in the tepui region of S Venezuela and N Brazil, in NW Peru, and along E Slope of Andes in Peru and Bolivia. Density in floodplain-forest in SE Peru estimated at 1 pair/100 ha, with average home range 40 ha; density in adjacent late-successional forest was 1.5 pairs/100 ha. Most populations appear to require nearly continuous forest, thus believed highly sensitive to human disturbance. One study in W Amazonian Brazil, however, noted presence not only in a small forest fragment (where encountered more frequently than in undisturbed forest), but also in forest regenerating after selective logging, and even in scrub (probably a single bird captured while moving between more continuous forest). Considered an indicator species for mid-montane humid forest in Madrean Highlands of S Mexico and mid-montane evergreen forest in N & C Andes.

**Bibliography.** Anon. (1998a), Bates & Parker (1998), Berlepsch & Hartert (1902), Berlepsch & Stolzmann (1896), Binford (1989), Blake (1950b, 1953, 1962), Bond (1953), Borges *et al.* (2001), Carriker (1933), Chapman (1917, 1926), Cory & Hellmayr (1925), Davis (1972), Diekey & van Rossem (1938), Edwards (1972), Fjeldså & Krabbe (1990), Foster *et al.* (1994), Friedmann (1948), Gochfeld & Tudor (1978), Griscom (1927a, 1932a), Griscom & Greenway (1941), Gyldestolpe (1945a, 1951), Hilty (2003a), Hilty & Brown (1986), Howell & Webb (1995a), Johns (1991), Karr, Robinson *et al.* (1990), Land (1962, 1970), LeCroy & Sloss (2000), Meyer de Schauensee (1950a, 1966), Meyer de Schauensee & Phelps (1978), Miller *et al.* (1957), Monroe (1968), Niethammer (1956), Novaes & Lima (1990), Parker & Bailey (1991), Parker *et al.* (1985), Peres & Whittaker (1991), Peterson & Chalif (1973), Phelps (1944), Phelps & Phelps (1963), Pinto (1978), Pitman *et al.* (2002), Ridgely & Gaulin (1980), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1889, 1911), Robinson & Terborgh (1997), Schäfer & Phelps (1954), Short (1961), Sick (1993), da Silva *et al.* (2002), Slud (1964), Smithe (1966), Smithe & Paynter (1963), Snethlage (1909), Snyder (1966), Stiles (1983b, 1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Sutton (1951a), Taczanowski (1882, 1884), Terborgh, Fitzpatrick & Enmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1990), Thurber *et al.* (1987), Todd (1917), Todd & Carriker (1922b), Tostain *et al.* (1992), Wetmore (1972), Willis (1983d), Wood & Leberman (1987), Zimmer (1934d).

## 17. White-throated Woodcreeper

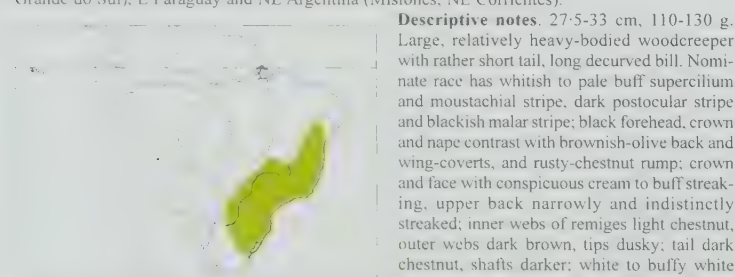
### *Xiphocolaptes albicollis*

**French:** Grimpar à gorge blanche **Spanish:** Trepatroncos Gorgiblanco  
**German:** Weißkehl-Baumsteiger  
**Other common names:** Bonfim/Vila Nova Woodcreeper (*villanovae*)

**Taxonomy.** *Dendrocopos albicollis* Vieillot, 1818, type from Rio de Janeiro, Brazil. May form a superspecies with *X. promeropirhynchus* despite some authors recognizing race *franciscanus* as a subspecies of *X. albicollis* instead of *X. falcistrois*, and others treating *villanovae* as a race of *X. falcistrois* instead of *X. albicollis*; recent phylogenetic study based on morphology allied *X. albicollis* with *X. major* instead of *X. promeropirhynchus* but failed to include *X. falcistrois*. Race *villanovae* sometimes considered a separate species. Specimens from S part of range of nominate race, having more olive (less tawny) plumage and less rufous on rump, sometimes recognized as race *argentinus*. Three subspecies recognized.

#### **Subspecies and Distribution.**

*X. a. villanovae* Lima, 1920 - known only from vicinity of type locality in NE Brazil (NE Bahia).  
*X. a. bahiae* Cory, 1919 - E Brazil (E & C Bahia).  
*X. a. albicollis* (Vieillot, 1818) - SE & S Brazil (S Bahia, S Goiás and Minas Gerais S to S Rio Grande do Sul), E Paraguay and NE Argentina (Misiones, NE Corrientes).



tawny remaining underparts, ground colour less tawny in S ("argentinus"); breast and sides boldly streaked pale buff to whitish, streaks in centre of breast bordered by darker spots, belly, thighs and undertail-coverts barred (more distinctly than on other *Xiphocolaptes*); underwing-coverts cinnamon, barred black; iris red to brown, orbital skin greenish; bill black, sometimes horn-coloured lower mandible; legs and feet yellowish-grey to dark green, brownish-grey or black. Distinguished from remarkably similar *Dendrocolaptes platyrostris* by longer, heavier bill, bold malar stripe, better-defined white throat. Sexes similar. Juveniles has shorter bill, broad drop-like spots of rusty-yellow on crown. Race *villanovae* is paler overall than nominate, with dark brown crown, more conspicuous supercilium, weaker barring on belly, shorter bill; *bahiae* is paler and browner, crown dark brown with tawny-rufous streaks, breast streaks lack dark borders, barring below restricted to a few dusky spots in centre of belly. **VOICE.** Sings primarily at dawn and dusk, sometimes adjacent to roost site; one of last birds to sing in the evening. Song typical of genus, a nasal whine followed by a loud, descending series of 4-6 disyllabic whistles, "reenht-wi-KEER wi-KEER wi-KEER wi-KEER wi-KEER wi-KEER wick" or "tee-ay, heechee heechee, hichee, hitchy...", series sometimes ending with throaty rattle, especially when agitated; both partners sing, female song hoarser but weaker. During day gives snarls, including rising "wheee", also 2-note call, possibly when alarmed, variously described as "cha-FESK", "wheee-chuck" or "eweh-wet", with initial note prolonged and forceful, and second ending in a pop.

**Habitat.** Humid Atlantic Forest, and semi-deciduous and gallery forests amid *cerrado* and Chaco. Characteristic species of Brazilian Atlantic Forest, but not completely restricted to it. In addition to primary forest, regularly frequents mature second growth, edges, occasionally even isolated trees in scrubby clearings. Occurs from lowlands to subtropical foothills above 2000 m; mostly below 1500 m, and possibly most common in tropical hill forest.

**Food and Feeding.** Mostly arthropods, but takes snails, bird eggs, and occasionally small vertebrates. Stomach contents have included cockroaches (Blattodea), beetles of various types, ants, and fly larvae; observed to take bird eggs from cavity nests. Generally encountered singly, sometimes in pairs; usually alone, but sometimes in association with either mixed-species flocks or ant swarms; dropped out of mixed-species flocks during breeding season at one site. Forages at all levels in forest, though seems to prefer lower and middle levels, and often seen quite close to the ground; not shy, but often climbs behind trunks when approached. Usually in lower strata of forest, where it moves slowly over fallen logs or up trunks, digging in and tearing off bark to expose prey hiding beneath. In one study, most foraging was concentrated on relatively large trunks (average diameter over 75 cm) at 5-8 m above ground, with maximum height only 12-13 m; often forages on rough bark, and generally on trunks and large branches. Obtains most food by gleaning, less frequently by flaking bark or pecking more forcefully. Like congeners, regularly pecks on rotting wood and forages amid bromeliads; may be a bromeliad-foraging specialist. Recorded foraging over swarms of both *Eciton burckellii* and *Labidus praedator*; one bird seen to sally from low trunk to ground after prey flushed by ants.

**Breeding.** Birds with fully active gonads in Oct-Nov in Brazil and E Paraguay, and in non-breeding condition in Apr in NE Argentina. Nest in natural cavity in tree; does not excavate nest. Clutch 2 white eggs, average 35 × 25 mm; presence of brood patch in both sexes suggests that they share in incubation and, probably, rearing of young.

**Movements.** Apparently resident throughout range; recent studies recorded its presence throughout year even at S limit of range in SE Brazil (Rio Grande do Sul).

**Status and Conservation.** Not globally threatened. Uncommon to fairly common over much of its range, and common at some sites in S Brazil; rare at fringe of range in S Paraguay (Ñeembucú region). Suggested to be only moderately sensitive to human disturbance, which may explain continued presence in relatively small fragments, older second growth and selectively logged sites. Abundance decreases with forest area, and ability to survive in smaller fragments less clear; recorded in Paraná (Brazil) in forest reserves as small as 11 ha within a matrix of fragments, even after over 40 years of isolation. Apparently less able to withstand fragmentation at sites farther N, possibly owing to greater degree of isolation of fragments; in Brazil, absent from tracts of 145 ha and 21 ha in São Paulo, and numbers significantly reduced in fragments smaller than 100 ha in Minas Gerais. May be affected detrimentally by selective cutting of its preferred large trees. An indicator species for humid broadleaf and lower montane Atlantic Forests.

**Bibliography.** Aleixo (1997), Aleixo & Galetti (1997), dos Anjos (2001a), Belton (1984), Bencke & Kindel (1999), Berlepsch & Ihering (1885), Bertoni (1901), Brooke (1983), Cory & Hellmayr (1925), Dabbene (1914), Darrieu & Camperi (1990), Davis (1945, 1946), Fraga (2002), Goerck (1999a), Höfling & Lencioni (1992), Holmberg (1939), Ihering (1898), Krügel & dos Anjos (2000), Lopes *et al.* (2003), Madroño, Robbins & Zyskowski (1997), Marini & Couto (1997), Mauricio & Dias (1998, 2001), Meyer de Schauensee (1966), Naka & Rodrigues (2000), Narosky *et al.* (1983), Olrog (1959a), de la Peña (1988), de la Peña & Rumboll (1998), Pinto (1935, 1978), Pinto & Camargo (1961), Ridgely & Tudor (1994), do Rosário (1996), Scott & Brooke (1985), Sick (1993), Sillett *et al.* (1997), da Silva & Oren (1997), Soares & dos Anjos (1999), Stotz *et al.* (1996), Willis (1979b, 1983d).

## 18. Moustached Woodcreeper

### *Xiphocolaptes falcistrois*

**French:** Grimpar à moustaches **German:** Piaubaumsteiger **Spanish:** Trepatroncos Bigotudo  
**Other common names:** Snethlage's Woodcreeper (*franciscanus*)

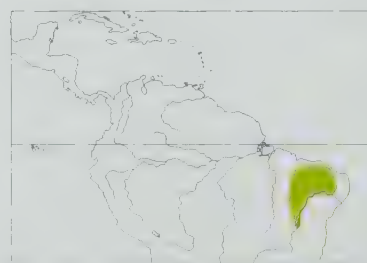
**Taxonomy.** *Dendrocolaptes falcistrois* Spix, 1824, no locality = Oeiras, Piauí, Brazil.

Uncertain whether affinities closer to *X. promeropirhynchus* or to *X. albicollis*. Race *franciscanus* considered a full species by many authors and a race of *X. albicollis* by some, but possibly not even a valid taxon; race *villanovae* of latter sometimes placed in present species. Two subspecies recognized.

#### **Subspecies and Distribution.**

*X. f. falcistrois* (Spix, 1824) - NE Brazil from E Maranhão and Ceará E to W Paraíba and W Pernambuco, S to NW Bahia.

*X. f. franciscanus* Snethlage, 1927 - E Brazil, W of R São Francisco, in W Bahia and N & NW Minas Gerais; specimen allegedly collected in Paraná Valley (Goiás) now believed to have been mislabelled.



Differs from *X. albicollis* in longer, slimmer bill with conspicuously pale lower-mandible, somewhat paler overall coloration (crown and facial markings brown instead of blackish), bolder face pattern, more cinnamon rump, weaker markings on crown and underparts. Sexes similar. Juvenile similar to adult, but bars and streaks on central belly broader and blackish, bill shorter, stouter and blackish with lower mandible dark greyish-brown. Race *franciscanus* is on average darker and more olive below than nominate, has narrower streaking on breast, weaker streaking on crown, also on average shorter-tailed and longer-billed, but substantial overlap between races in all characters. **VOICE.** Rarely heard song a harsh whine followed by a far-carrying series of c. 5 descending notes at intervals of c. 1 second, "nk-wiirh, week! weeer, weeer, weeur", similar to that of congeners but notes not so obviously disyllabic; has approached in response to playback of recordings of *X. albicollis*. Calls similar to that of latter species, most often a whine ending in a harsh note, "niemu-chikl".

**Habitat.** Semi-deciduous woodland, wooded *caatinga*, palm woodland (in Maranhão), and gallery forest. Typical trees at a preferred site in Minas Gerais were *Bursera leptophloeos*, *Astronium urundeuva*, *Chorisia ventricosa*, *Cavanillesia arborea*, *Spodias tuberosa*, *Hymenaea martiana*,



and *Schinopsis*. Primarily in interior of intact and lightly disturbed forest, generally frequenting tallest and most extensive forests in region, but sometimes also visits edges within suitable habitat; often at bases of calcareous hills, in mesic depressions, or in "monsoon" forest in otherwise dry habitats (especially in N of range). Known localities mostly below 550 m, but to over 800 m in N part of range.

**Food and Feeding.** Primarily insectivorous; limited observations of insect larvae, ants, beetles and snails being taken. Seen singly, in pairs, or in groups of 3-6 individuals that may represent families. Most sightings appear to be of either solitary individuals or birds in monospecific groups; sometimes seen with other dendrocolaptids, but ignored nearby mixed-species flocks on other occasions. Forages mostly along trunks and branches in mid-levels of tall forest, but sometimes descends to ground level; may be specialized on foraging among bromeliads. Observed to remove prey from tree cavities, rummage on ground among leaf litter, and remove strips of bark from trunk of a tree.

**Breeding.** Apparently breeds during austral summer: birds with enlarged gonads, one having a brood patch, in Oct-Nov in Minas Gerais; male with moderately large testes in Dec, whereas others in May-Jun (W Bahia) believed to be in post-breeding condition; specimens in May-Jun (Maranhão, Piauí) and Aug (Bahia) not in breeding condition; juvenile in mid-Jun in Maranhão. Nest, eggs and other details undescribed; presence of brood patch on a male suggests that incubation (and probably parental care) shared by both sexes.

**Movements.** Resident.

**Status and Conservation.** **VULNERABLE.** Uncommon to rare, and very local. World population believed to be between 2500 and 10,000 individuals, and declining; considered threatened in Brazil as a whole, and endangered in state of Minas Gerais. In region occupied, vast majority of forest has already been removed and remainder is disappearing rapidly. Causes of habitat loss include burning, cutting for charcoal and conversion to agriculture, complicated by fact that forests harbouring this species are situated on richest soils in region. Even relatively large fragments can disappear quickly: one site in W Bahia that contained extensive forest occupied by this dendrocolaptid in 1988 had been completely destroyed by 1993, and another site occupied as recently as Mar 1997 was largely cleared by a road-improvement project by Nov 1998. N nominate race suggested by some as being less sensitive to human disturbance than are S populations, but this probably not the case given patchy nature of remaining fragments throughout range; recent records in N scattered among only a few localities. Legally protected in Brazil, and conservation measures have had some success in setting aside key sites as parks and reserves. Protected sites where the species survives include Serra do Baturité State Environmental Protection Area (Ceará), and Cavernas do Peruágu National Park (Minas Gerais). Future work should concentrate on reduction of forest loss throughout region (in part through better enforcement of existing laws), mapping of remaining forest fragments, creation of a system of conservation units, and promotion of sustainable use at unprotected sites. An indicator species for both gallery forest (nominate race) and tropical deciduous forest in Cerrado region (*franciscanus*) of C South America.

**Bibliography.** de Andrade *et al.* (1986, 1988), Collar *et al.* (1992), Cory & Hellmayr (1925), Gonzaga (1989), Hellmayr (1929b), Kirvan *et al.* (2001), Machado *et al.* (1998), Pinto (1938, 1952, 1978), Pinto & Camargo (1961), Reiser (1926), Ridgely & Tudor (1994), Sick (1993), da Silva & Oren (1997), Stattersfield & Capper (2000), Teixeira (1990b), Teixeira & Luigi (1989), Teixeira *et al.* (1989), Willis & Oniki (1991).

## 19. Great Rufous Woodcreeper

### *Xiphocolaptes major*

**French:** Grand Grimpar **German:** Fuchsröter Baumsteiger **Spanish:** Trepatroncos Colorado  
**Other common names:** Rufous Woodcreeper

**Taxonomy.** *Dendrocopus major* Vieillot, 1818, Paraguay.

Relationships uncertain; recent phylogenetic study based on morphology suggested an affiliation with *X. albicollis*. N nominate race and *castaneus* intergrade in N Argentina. Individual variation in plumage possibly more marked than geographical variation. Four subspecies recognized.

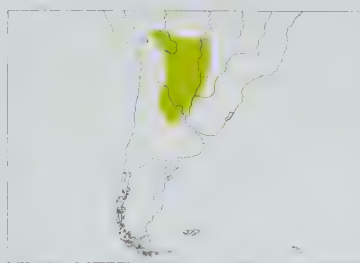
**Subspecies and Distribution.**

*X. m. castaneus* Ridgway, 1890 - NC & E Bolivia, SW Brazil (Mato Grosso do Sul) and NW Argentina (SE Jujuy, N Salta).

*X. m. remoratus* Pinto, 1945 - SW Mato Grosso, Brazil.

*X. m. major* (Vieillot, 1818) - Paraguay and N Argentina (Jujuy, Salta and Formosa S to Córdoba and NE Santa Fe).

*X. m. estebani* da Silva & Oren, 1991 - Tucumán, in NW Argentina.



**Descriptive notes.** 27-34 cm; male 120-150 g, female 120-162 g. Large, heavy-bodied woodcreeper with long, heavy, somewhat decurved bill. N nominate race is bright cinnamon-rufous overall, slightly more brownish or olive on crown (variable) and more chestnut on tail; remiges reddish-brown, primaries with dusky tips; lores blackish; throat pale cinnamon with whitish-buff streaking, underparts cinnamon, variable amount of buffy shaft streaks on breast and dusky brownish barring on belly; uniform cinnamon-rufous undertail-coverts; iris dark brown, rich red-brown or crimson; bill horn-coloured basally,

and horn-white distally, smoky blue-grey, or grey to greyish-olive with blackish tip; legs and feet dark greyish-olive, greenish or bluish-grey. Sexes similar. Juvenile differs from adult in generally clearer, more brilliant coloration, especially below, and more obvious breast streaking but weaker borders to crown feathers. Race *remoratus* has darker upperparts, less ferruginous underparts, whitish on throat more limited than nominate; *castaneus* is darker overall (especially on more brownish head), upperparts deeper chestnut, breast more narrowly streaked, barring on belly reduced; *estebani* is similar to nominate, but much lighter in general coloration. **Voice.** Song a slightly descending series of up to 12 disyllabic "hie!-up" whistles with loud, ringing quality, possibly longer in duration and including more notes than songs of congeners. Often gives a two-part call similar to notes of song, but more emphatic, longer, accented on second syllable, "eehr-eeek!".

**Habitat.** Dry forest, semi-deciduous woodland, Chaco woodland, gallery forest; less frequently scrub-forest, *cerrado*, wooded savanna, and even park-like habitats adjacent to forest. Largely in woodland interior, but occasionally visits savanna and edges. Primarily in tropical zone of Chaco region, but also inter-montane valleys of adjacent Andes; to 1800 m, mostly below 1500 m.

**Food and Feeding.** Largely insectivorous, but small vertebrates taken at least occasionally. Stomach contents chiefly invertebrates, comprising ants, grasshoppers (Acrididae), various types of beetle, pentatomid bugs, earwigs (Dermaptera), Lepidoptera larvae, and remains of other insects, but with trace amounts of vegetable matter and bits of snail shell. Has been observed eating a hylid frog 7 cm long, and taking (but not definitely eating) an unidentified colubrid snake 40 cm in length; a remarkable observation of an individual first pecking on and then eating a bat. Usually encountered alone or in pairs; occasionally in groups of three, probably representing families. Creeps like a woodpecker (Picidae) along trunks and large branches from understorey to subcanopy; also regularly descends to forage on ground, especially among open groves of trees. Most prey probably obtained by gleaning and probing, but sometimes rummages among leaf litter on ground or pecks loudly on trunks.

**Breeding.** Nest with incubated eggs in mid-Nov in Argentina (Santa Fé); laying female in early Nov in Paraguay; birds in breeding condition in Oct (but not in Sept) in N & E Bolivia and Paraguayan Chaco. Nest in natural cavity or old woodpecker hole 1-6-4 m above ground, usually lined with dry leaves, straw or wood shavings; cavity depth 1-1-6 m, entrance hole 8 × 13 cm, may enlarge narrow cavity entrance by using bill. Clutch 2-3 pure white eggs, average 36 × 26 mm.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Rare to uncommon over most of range; apparently more common at some sites, e.g. the *campos-cerrados* of C Paraguay. Relatively rare at edge of range in N Pantanal (Brazil). Although fairly common and widespread in the past at well-wooded sites in NW Argentina (Salta, Tucumán), most recent observers have found it to be scarce in this region. Key to this species' presence seems to be the availability of intact forest. Considered to be only moderately sensitive to habitat loss and other forms of human disturbance, and thus a relatively low conservation and research priority. An indicator species for gallery forest in C South America.

**Bibliography.** Brace *et al.* (1997), Camperi (1988), Cherrie (1916b), Chubb (1910), Cintra & Yamashita (1990), Cory & Hellmayr (1925), Dabbene (1912), Dubs (1992), Esteban (1948), Friedmann (1927), Grant (1911), Hartert & Venturi (1909), Hayes & Argaña (1990), Holmberg (1939), Ihering (1900), Kerr (1892), Kratter *et al.* (1993), Laubmann (1940), Lönnberg (1903), Mazar Barnett (2002), Meyer de Schauensee (1966), Narosky & Yzurieta (1993), Narosky *et al.* (1983), Olrog (1959, 1963b, 1979b), de la Peña (1977, 1987, 1988, 1997), de la Peña & Rumboll (1998), Pinto (1978), Ridgely & Tudor (1994), Sick (1993), da Silva & Oren (1991), Storer (1989), Stotz *et al.* (1996), Wetmore (1926), White & Selater (1883), Zotta (1936).



PLATE 34

inches 4  
cm 10

*ssp sheffleri*

*ssp sanctithomae*

*ssp radiolatus*

*ssp concolor*

*ssp punctipectus*

20

*ssp hesperius*

*ssp certhia*

21

*ssp medius*

22

*ssp seilerni*

*ssp transfasciatus*

*ssp platyrostris*

24

23

*ssp picumnus*

*ssp multistrigatus*

*ssp puncticollis*

*ssp pallescens*

*ssp intermedius*





# Genus *DENDROCOLAPTES* Hermann, 1804

## 20. Northern Barred Woodcreeper

### *Dendrocolaptes sanctithomae*

**French:** Grimpur vermiculé **Spanish:** Trepatroncos Barrado Norteño  
**German:** Nördlicher Bindenbaumsteiger

**Taxonomy.** *Dendrocops Sancti-Thomae* Lafresnaye, 1852, "in Sancti-Thomae Insula"; error = Santo Tomás, Izabal, Guatemala.

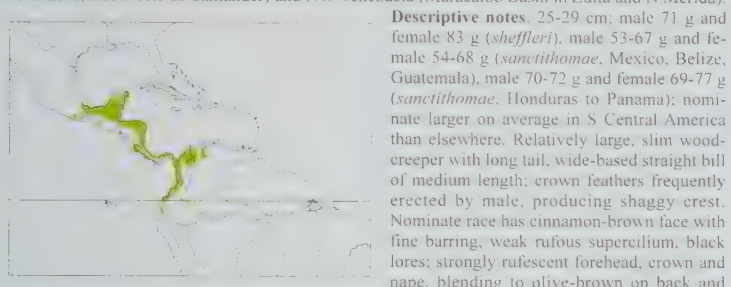
Until recently considered conspecific with *D. certhia*; accorded full species status on basis of vocal, behavioural and morphological differences. Vocal characters suggest that race *punctipictus* may also be a separate species, but more study needed; proposed race *hyleorus* doubtfully distinct from *punctipictus*, may reflect intergradation between it and nominate in N Colombia (Magdalena, Santander). Variation in both bill length and extent of pale base of lower mandible is clinal in nominate; this, combined with a typographical error, resulted in description of races *nigrirostris* (Costa Rica, Panama) and *colombianus* (W Colombia, NW Ecuador), both subsequently synonymized. Supposed variation leading to description of *legtersi* (Yucatán Peninsula) appears to reflect an artifact of type series. Four subspecies recognized.

#### Subspecies and Distribution.

*D. s. sheffleri* Binford, 1965 - Pacific slope of Sierra Madre del Sur in SW Mexico (Guerrero, Oaxaca).  
*D. s. sanctithomae* (Lafresnaye, 1852) - Central America and NW South America from S Mexico (C Veracruz, Yucatán Peninsula) S on Caribbean slope to Panama; locally also Pacific slope in S Mexico (one record in Chiapas), Honduras, El Salvador and from NW Costa Rica S to Panama, N & W Colombia (Chocó region) and NW (one record WC) Ecuador.

*D. s. hesperius* Bangs, 1907 - Pacific-slope lowlands of SW Costa Rica (including Osa Peninsula) and adjacent W Panama.

*D. s. punctipictus* Phelps, Sr. & Gilliard, 1940 - N Colombia (middle Magdalena Valley S to Santander, also Norte de Santander) and NW Venezuela (Maracaibo Basin in Zulía and N Mérida).



**Descriptive notes.** 25-29 cm; male 71 g and female 83 g (*sheffleri*), male 53-67 g and female 54-68 g (*sanctithomae*, Mexico, Belize, Guatemala), male 70-72 g and female 69-77 g (*sanctithomae*, Honduras to Panama); nominate larger on average in S Central America than elsewhere. Relatively large, slim woodcreeper with long tail, wide-based straight bill of medium length; crown feathers frequently erected by male, producing shaggy crest. Nominant race has cinnamon-brown face with fine barring, weak rufous supercilium, black lores; strongly rufescent forehead, crown and nape, blending to olive-brown on back and

wing-coverts, crown feathers obviously barred with black, back somewhat less so; cinnamon-rufous to rufous-chestnut remiges, rump and tail, primary tips dusky; chin, throat and underparts golden to cinnamon-buff (becoming slightly duller in colour to S), narrowly but crisply barred black throughout; iris light to dark brown, sometimes with reddish component; bill largely blackish, cutting edges pale, base of lower mandible pale flesh, greyish or brownish (decreasing in extent from N to S); legs and feet dark brown or black to dull greyish-green, bluish or horn-coloured. Distinguished from similar *D. certhia* mainly by combination of conspicuous black lores, rufous cap, largely blackish bill and better-defined and more extensive barring below (extending up through chin). Female is slightly larger than male. Juvenile is similar to adult, but barring below more diffuse, especially on belly, undertail-coverts more rufescent, also more uniformly black bill. Race *sheffleri* differs most obviously in creamy-buff bill, also narrower barring below, sparser barring above, greyish-tinged lower breast contrasting with more yellowish upper breast and throat; *hesperius* resembles nominate, but barring below conspicuously finer, that on upperparts weaker, and ground colour both below and on crown duller; *punctipictus* has conspicuous triangular spots on breast, imparting weakly streaked or spotted appearance. **Voice.** Song, given largely at dawn and dusk (intermittently also throughout day), and often from concealed perch in canopy, a series of 2-12 (usually 3-5) loud whistles each c. 0.5 second long and rising sharply at end, described as "oowit, oowit, oowit, OOWIT, OOWIT!", or as "téw-wee, téw-wee, téw-wee" or repeated "dwoi'ik"; song of *punctipictus* markedly different, beginning as series of long whistles on one pitch, but ending in harsh chatter. Various calls described as "oiyñk" or "awwýñk", snarling "wi-kaii" and "caa", grunting "eh", murmured "auh-auh-auh-auh", quiet "wh-whee", also nasal "kiyarr" sometimes in series; when agitated, may give a series of "gobbling" notes that rise and fall in pitch.

**Habitat.** Humid forest. Primarily tall evergreen forest, but occurs less frequently in low-stature rainforest on Yucatán Peninsula, gallery forest in NW Costa Rica and mangroves along coast of Colombia; also tropical semi-deciduous forest. Occasionally extends into cloudforest and even pine-oak (*Pinus-Quercus*) woodland, at least during non-breeding season. Generally in interior of mature forest, but regularly visits forest edge, older second growth and even tree plantations near forest; captured in nets slightly less frequently in natural forest gaps than within mature forest. Lowlands and foothills to c. 1800 m; most frequent in tropical zone below 1000 m.

**Food and Feeding.** Diet mainly arthropods, but small vertebrates also taken. Preys largely on grasshoppers (Acrididae), cockroaches (Blattodea), beetles and scorpions, also on spiders, centipedes (Chilopoda), caterpillars, and smaller numbers of many other invertebrates. Small lizards not only taken by adults (20% of all prey in one study), but also delivered to nests. Stomach contents comprised mainly orthopterans in one study, mainly beetles in another, with smaller numbers of cockroaches, cicadas (Cicadidae), hemipteran bugs, spiders and centipedes. Despite possible bias caused by difficulty of observing small items in field, most prey identified in one study were relatively large, chiefly 20-50 mm, but with one lizard 130 mm in length. Associates at least on occasion with mixed-species flocks, but most often encountered at swarms of army ants (*Eciton burchelli*, less frequently *Labidus praedator*); roughly 70% of foraging time was spent in association with ant swarms at one Panamanian site. Apparently a nearly "professional" ant-follower that

not only uses vocalizations of other ant-followers to locate swarms, but also checks regularly on inactive bivouacs; rarely visits more than one ant colony per day. Usually present at swarms singly or in pairs, but three or, rarely, four birds have been seen together. Forages mainly in understory and mid-levels of forest, less frequently into subcanopy or even canopy. Often forages in undergrowth when associated with swarming ants, where two main areas of activity evident, one at 0.4-0.6 m over ants moving across ground, another 2-6 m up in association with columns of ants ascending trunks; a less obvious area of activity 15 m up may correspond to foraging away from ants, or to birds not foraging at the time. Most foraging over ants occurs from perches on near-vertical trunks 5-100 cm in diameter, from which makes short-distance sallies of less than 1 m (occasionally to 3 m, rarely farther) to capture prey against foliage, trunks, vines, the ground or, occasionally, in the air; most prey taken either from ground or 3-6 m up. Regularly gleans and pecks items from trunks, crevices and epiphytes. Somewhat less aggressive than smaller woodcreepers, but regularly supplants both them and conspecifics, less frequently antbirds (Thamnophilidae); *Dendrocincla fuliginosa* and Ocellated Antbird (*Phaenostictus mcleannani*) are common targets of aggression. Females dominant over slightly smaller males. When away from army ants, regularly encountered both alone and with mixed-species flocks, less frequently with monkeys, e.g. troops of squirrel monkeys (*Saimiri oerstedii*) in S Costa Rica; seems to forage less often with mixed-species flocks than does Amazonian *D. certhia*. Away from ants, most foraging occurs 2-15 m above ground on vines and larger trunks. Often rather lethargic and easily overlooked. Has been observed "anting".

**Breeding.** Season May-Jul in Costa Rica, where nests with eggs found until late Jul; female with egg in oviduct in late Jul in El Salvador; birds in breeding condition in Apr-May and early Aug in S Mexico and Belize, and early Jul-Aug in Guatemala and Nicaragua; in breeding condition in late Nov-Mar and adult feeding fledgling in mid-Jun in Colombia. Nest at 1.5-6 m, usually low down, in hollow trunk of palm, broken-off branch or other natural cavity, lined with leaves and flakes of bark. Clutch 2 white eggs, average 30.5 × 24 mm; joint parental care indicated by presence of brood patch on male, and disappearance each morning of male of one pair soon after courting (suggesting that male was incubating). Has been recorded molting while still in breeding condition.

**Movements.** Probably resident; records at upper end of elevational range may reflect dispersal from lowland breeding sites.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common within humid forest to 1000 m over most of range; possibly more common than elsewhere in lowlands on Caribbean slope and S Pacific slope of Costa Rica. Less common at upper elevations, and uncommon to rare at margin of range on Pacific slope in S Mexico (Oaxaca) and where habitat either limited, as in El Salvador, or marginal, as on Yucatán Peninsula. Race *punctipictus*, which may deserve full species status, is probably among the most threatened of all dendrocolaptid populations as a result of extensive habitat destruction within its highly restricted, lowland range in N Colombia and NW Venezuela. All populations have undoubtedly declined following extensive loss of lowland forest throughout region. It has been speculated that marked fluctuation in numbers, even within suitable habitat, may contribute to local disappearance from marginal sites such as Barro Colorado I, in Panama, where always scarce. Like most ant-following species, requires a relatively large home range and considered to be sensitive to forest fragmentation and other forms of human disturbance, and unlikely to colonize new areas across barriers of unsuitable habitat. An indicator of tropical lowland evergreen forest on Gulf-Caribbean slope, in the Chocó lowlands and in N South America. **Bibliography.** Anon. (1998a), Bangs (1907, 1930), Bangs & Barbour (1922), Binford (1965, 1989), Blake, E.R. (1953), Blake, J.G. & Loiselle (1991, 2000, 2001), Boinski & Scott (1988), Carriker (1910), Carriker & Meyer de Schauensee (1935), Chapman (1917), Coates-Estrada & Estrada (1989), Cory & Hellmayr (1925), Davis (1972), Dieke & van Rossem (1938), Edwards (1972), Eisenmann (1952), Foster (1975), Graber & Graber (1959), Granizo (2002), Hartman (1961), Hayes & Argaña (1990), Hilty (2003a), Hilty & Brown (1986), Howell, S.N.G. & Webb (1994, 1995a), Howell, T.R. (1957), Johnson (1954), Karr (1982a, 1982b), Karr, Robinson *et al.* (1990), Land (1963, 1970), Levey (1988), Loiselle (1988), Marantz (1997), Meyer de Schauensee (1950a, 1964, 1966), Meyer de Schauensee & Phelps (1978), Miller *et al.* (1957), Monroe (1968), Olivares (1958), Orians (1969), Otvos (1967), Parker & Carr (1992), Parkes (1999), Paynter (1954, 1955, 1957), Peterson & Chalif (1973), Phelps & Gilliard (1940), Phelps & Phelps (1963), Puebla *et al.* (2002), Richmond (1893), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robbins *et al.* (1985), Rodner *et al.* (2000), Russell (1964), Skutch (1948), Slud (1960, 1964, 1980), Smithe (1966), Smithe & Paynter (1963), Stiles (1983b, 1985), Stiles & Levey (1994), Stiles & Skutch (1989), Stotz *et al.* (1996), Strauch (1977), Sturgis (1928), Sutton (1951a), Swartz (2001), Tashian (1952), Todd (1950a), Wetmore (1942, 1972), Willis (1960a, 1972b, 1972c, 1986, 1992c), Willis & Eisenmann (1979), Willis & Oniki (1978, 1992), Wood *et al.* (1986).

## 21. Amazonian Barred Woodcreeper

### *Dendrocolaptes certhia*

**French:** Grimpur barré **Spanish:** Trepatroncos Barrado Amazonico

**German:** Amazonien-Bindenbaumsteiger

**Other common names:** Concolor(ed) Woodcreeper (*concolor*)

**Taxonomy.** *Picus certhia* Boddaert, 1783, "Cayenne".

Until recently considered conspecific with *D. sanctithomae*; separated on basis of vocal, behavioural and morphological differences. Race *concolor* sometimes treated as a separate species, but vocal and morphological data suggest that it is instead a pale, weakly barred representative of present species; characters of birds from R Tapajós E to R Tocantins (NC Brazil), described as race *ridgwayi*, apparently represent introgression between *concolor* and *medius*. Birds from E Peru showing characters of *polyzonus* may instead reflect hybridization between *radiolatus* and *juvuanus*. One study indicated genetic differences between *radiolatus* and *concolor* as great as or greater than those between it and *D. sanctithomae*. Six subspecies recognized.

#### Subspecies and Distribution.

*D. c. radiolatus* P. L. Sclater & Salvin, 1868 - W Amazonia, N of Amazon, in SE Colombia, NW Brazil (W of R Negro), E Ecuador and N & C Peru (largely W of R Ucayali, S to Junín).

*D. c. certhia* (Boddaert, 1783) - N & NE Amazonia, from extreme E Colombia (E Guainía), S & E Venezuela and the Guianas, S to Amazon in N Brazil (from R Negro E to Amapá).

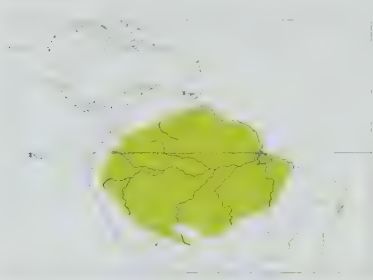
*D. c. juvuanus* H. von Ihering, 1905 - SW Amazonia, S of Amazon, in E Peru, W Brazil (E to R Madeira, S to NW Mato Grosso) and N Bolivia.

*D. c. concolor* Pelzelin, 1868 - S Amazonian Brazil, S of Amazon, from R Madeira E to R Tocantins, S to Mato Grosso and N Tocantins; also extreme NE Bolivia.

*D. c. medius* Todd, 1920 - SE Amazonia, S of Amazon, from R Tocantins E to NW Maranhão; isolated population in NE Brazil (Pernambuco, Alagoas) may no longer exist.



*D. c. polyzonus* Todd, 1913 - SW edge of Amazonia in C Bolivia, possibly extending into adjacent SE Peru.



and tail cinnamon-rufous to rufous-chestnut, primary tips dusky; pale grey to dirty white chin and throat contrast conspicuously with deep buff to fulvous from breast through undertail-coverts, fine dusky barring almost throughout underparts; underwing cinnamon-rufous to ochre-yellow; iris reddish to dark brown; bill dark red to brownish, usually paler on cutting edges and at base of lower mandible; legs and feet brown, greenish, grey, olive or black. Distinguished from similar *D. sanctithomae* mainly by lack of rufous tones on crown, brownish to red bill, pale lores and throat, more diffuse barring below; lacks streaking on crown and breast characteristic of *D. picumnus* and most other large woodcreepers; race *concolor* distinguished from race *uniformis* of *Hylexetastes perrotii* by smaller size, longer tail, generally slimmer body, and vocalizations (both have red bill). Female is slightly larger than male. Juvenile is similar to adult, but barring less pronounced both above and below, lighter regions of plumage somewhat paler, lacks pale streaks on crown, bill often shorter and darker. Race *juruanus* is closely similar to nominate, but lacks golden streaks on crown; *polyzonus* is much more richly coloured than previous, more cinnamon-brown above, and ochraceous-brown below; *radiolatus* has coloration similar to last, but much more strongly and broadly barred with black on back, greater coverts and underparts; *concolor* is barred inconspicuously or not at all, has redder bill, dark throat and plumage coloration that is variable geographically, greyer in SW, more ochraceous to N, with fine barring weak or absent W of R Tapajós, but often visible (especially below) in population E of there ("ridgwayi"); *medius* most similar to nominate but crown duller, face pale grey and scaly in appearance, underparts paler and more weakly marked. Voice. Song, given mostly at dawn from concealed perch in or near forest canopy, sometimes at dusk, rarely during day, is a rapidly delivered series c. 2 seconds long of roughly 8-15 simple notes, ascends slightly at first and then descends and slows, "whee-whee-EE-EE-Ee-ee-ee-ee-eu eu eu" or "tew-tew-tew-tew-tew-tew-tew-tew-tu tu tu tu", resembling a laugh or whinny; notes delivered more slowly than in song of *D. picumnus*; a "forced song" was described as abrupt "cai-i-i-i-i-i-i-i". Calls include snarls, a "chah-eef" alarm, squeaky "chi-ku", hissing "piiuh"; various calls by young birds, e.g. "fi-u", "fi-fi-fi-fi-u", "fiu".

**Habitat.** Humid evergreen forest. Largely tall *terra firme* forest, but also both flooded forest and floodplain-forest; less frequently *campinarana*, savanna forest, mangrove swamps; also deciduous and gallery forests along S fringe of Amazonia. Most common in interior of mature forest with relatively open understorey, but regular also in older second growth and at forest edge. Isolated population in NE Brazil occurred in both tall forest and more scrubby second growth. Amazonian lowlands and adjacent foothills; most frequent below 900 m, but to c. 1400 m in tepui region.

**Food and Feeding.** Primarily insectivorous, but small vertebrates also taken. Over ants, preys mostly on grasshoppers (Acrididae) and cockroaches (Blattodea), also on beetles, scorpions, spiders, centipedes (Chilopoda), caterpillars, and, to lesser degree, many other invertebrates (including moths and even crabs). Small lizards appear to be most common vertebrate prey, but frogs also taken. Stomach contents included mainly beetles, also hemipteran bugs, flies, caterpillars, various orthopterans, ants, spiders, and millipedes (Diplopoda). Prey items often relatively large, regularly 20-50 mm, and one centipede was 130 mm in length; these regularly battered against tree trunks before being swallowed. Although considered a "professional" ant-follower by some workers, others have suggested that it forages alone or with mixed-species flocks more often than with ants; compared with *D. sanctithomae*, forages over ants less but with flocks more, but, like that species, sometimes seen in association with troops of monkeys. Usually attends ants (primarily *Eciton burchelli*, possibly also *E. rapax* and *Labidus praedator*) singly or in pairs, but three or, rarely, four birds recorded together. Forages mostly in understorey when associated with ants, but frequently up into mid-levels or subcanopy when away from them. Activity concentrated 2-6 m above ground, in association with columns of ants ascending trunks; less obvious activity centres within 0-5 m of ground and 15 m up, apparently corresponding to, respectively, foraging over ants moving across ground and foraging away from ants. Possibly excluded from low positions by large antbirds (Thamnophilidae) and by larger *D. picumnus* and *Hylexetastes*. Hunts mostly from perches on near-vertical to slightly leaning trunks 5-50 cm in diameter, from which makes short sallies of less than 2 m (rarely 3 m or more) to capture prey, taken mostly 2-5 m up over ants, with foraging closer to ground less frequent than in *D. sanctithomae*; most sallies directed at foliage (over 55% of all sallies in one study), occasionally at trunks, vines, the ground, or even in air. Gleans and pecks items from trunks, stumps, vines and foliage less frequently than does *D. sanctithomae*, and forages among dead leaves only on occasion. Regularly supplants conspecifics and most smaller woodcreepers, especially *Dendrocincla fuliginosa*, sometimes also antbirds; in turn, is supplanted regularly by larger *D. picumnus*, *Nasica longirostris* and *Hylexetastes*, and occasionally by several smaller *Xiphorhynchus*. Larger females apparently dominant over smaller mates. Away from ants, single birds or pairs often associate with mixed-species flocks, but also encountered regularly alone; most foraging occurs 2-15 m above ground on vines and larger trunks, from which prey often taken by sallies of 1-2 m to undersides of leaves, less frequently gleaned from trunks. Açaí palms, which harbour many arthropods, a favoured substrate in *várzea* forest in lower Amazonia.

**Breeding.** Birds in breeding condition in both Feb-Apr and mid-Aug to late Oct in N part of range (S Venezuela, Guianas, N Brazil), in early Dec to late Jun on Marajó I (Brazil), and in early Oct in S Amazonia; in non-breeding condition in May in E Colombia and Jun in N Brazil (Amapá); incubating bird in early Dec at Belém (Brazil), adult carrying food in mid-Oct in French Guiana, and small young in nest in early Sept at Manaus (Brazil); fledglings in late Apr and early Oct to early Jan in S Venezuela and the Guianas, mid-Nov to early Jan at Manaus, and mid-Jun to late Aug and early Nov to mid-Feb in S Amazonian Brazil; suggested that breeding may be on a cycle of 9-10 months in some places, although likely concentrated during dry season at most sites. Remains paired throughout year. Nests in old woodpecker (Picidae) hole or natural cavity in tree, once 2 m up in a trunk 25 cm in diameter, once in a cavity 2-5 m in depth; estimated territory size 15 ha in SE Peru. Clutch 1 white egg, one 30 × 24 mm; parental care apparently by both sexes. Birds molting in late Oct (Mato Grosso, Brazil) and in late Feb to early Mar (Cerro de la Neblina, Venezuela); molt appears to follow breeding, but seasonality from site to site remains unclear.

**Movements.** Resident.

**Descriptive notes.** 26-28.5 cm; male 62.5-73.5 g and female 60-79 g (*certhia*), male 50-66 g and female 52-71 g (*concolor*). Relatively large, slim woodcreeper with long tail, medium-length bill straight and flattened with wide base, slightly hooked tip; head feathers of male frequently erected into somewhat shaggy crest. Nominant race has brownish face with fine barring, weak supercilium, pale lores and auriculars; olive-brown above, forehead to nape darker, crown feathers with golden-buff shaft streaks and black tips, slightly paler and more rufescent back and wing-coverts weakly barred with blackish; remiges, rump

## Family DENDROCOLAPTIDAE (WOODCREEPERS) SPECIES ACCOUNTS

**Status and Conservation.** Not globally threatened. Uncommon to fairly common in lowland forest almost throughout range; isolated population of race *medius* in NE Brazil very rare, and possibly extirpated, in what little habitat remains. May be less common at upper elevational limit at base of tepuis, where recorded once to 1200 m in E Colombia, but possibly more regular to 1400 m in S Venezuela; occurs only locally along E slope of Andes to 900 m in Ecuador. Estimated densities at sites in mid-successional and late-successional forest on floodplain in SE Peru 1-5 pairs/100 ha; those in *terra firme* forest varied from 0.6 pairs/100 ha in SE Peru to 4-5 pairs/100 ha in Amazonian Brazil. Unlike truly "professional" ant-followers, this species can exist in, or colonize, both small forest fragments and selectively logged forest, at least for several years, provided that continuous forest is nearby. An indicator of tropical lowland evergreen forest in NE Brazil and in N & S Amazonia.

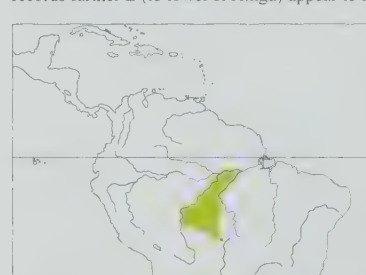
**Bibliography.** Bates & Parker (1998), Bates *et al.* (1989), Berla (1946), Berlepsch & Hartert (1902), Bierregaard (1988), Bierregaard & Lovejoy (1989), Blake (1950b, 1963), Bond (1953), Borges *et al.* (2001), Brace *et al.* (1997), Chapman (1917), Chubb (1921), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1925), Dick *et al.* (1984), Dubs (1992), Foster *et al.* (1994), Friedmann (1948), Fry (1970), Graves & Zusi (1990), Griscom & Greenway (1941), Gyldestolpe (1945a, 1945b, 1951), Harper (1989), Haverschmidt & Mees (1994), Hellmayr (1905, 1906c, 1910), Hilty (2003a), Hilty & Brown (1986), Ihering (1904), Johns (1991), Karr, Robinson *et al.* (1990), Lloyd & Marin (2000), Lovejoy (1974), Marantz (1997), Mason (1996), Menegatto & Hellmayr (1906a), Meyer de Schauensee (1950a, 1964, 1966), Meyer de Schauensee & Phelps (1978), Moskovits *et al.* (1985), Niethammer (1956), Novaes (1970, 1974, 1976), Novaes & Lima (1990), O'Neill & Pearson (1974), Olivares (1964a), Oniki (1971b, 1972a, 1974), Oniki & Willis (1972, 1982), Oren & Henriques (1994), Parker & Bailey (1991), Parker *et al.* (1982), Pearson (1971), Pelzelin (1868-1871), Penard & Penard (1908-1910), Peres & Whittaker (1991), Phelps & Phelps (1963), Pinto, M.L. (1991), Pinto, O.M. de Oliveira (1938, 1947, 1953, 1954a, 1978), Pinto, O.M. de Oliveira & Camargo (1957), Remsen & Parker (1984), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robbins *et al.* (1991), Robinson & Terborgh (1997), Rodner (1991), Schubart *et al.* (1965), Sclater & Salvin (1867a, 1867b), Sclater *et al.* (1873), Servat (1996), Sick (1993), da Silva *et al.* (1990), Snelhiage (1908, 1914), Snyder (1966), Stotz (1993), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Stouffer & Bierregaard (1995), Taczanowski (1884), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1990, 1992, 1994), Thiollay & Jullien (1998), Tostain *et al.* (1992), Willard *et al.* (1991), Willis (1979c, 1982c, 1982d, 1983e, 1986, 1992c), Willis & Oniki (1978, 1988c), Zimmer (1934c).

## 22. Hoffmann's Woodcreeper *Dendrocolaptes hoffmannsi*

**French:** Grimpar de Hoffmanns **German:** Paräbaumsteiger **Spanish:** Trepatroncos de Hoffmann

**Taxonomy.** *Dendrocolaptes hoffmannsi* Hellmayr, 1909, Calama, Rio Madeira, Rondônia, Brazil. Apparently forms a superspecies with *D. picumnus*, suggested as conspecific by some authors, and with *D. platystris*, being closely allied to both based on vocal and behavioural characters combined with biogeographical patterns. Allied with *D. sanctithomae* and *D. certhia* in one phylogenetic study on basis of anatomical characters. Monotypic.

**Distribution.** S Amazonian Brazil, S of Amazon, from R Madeira E to R Tapajós and its headwaters at R Juruena, S at least to Rondônia and SW Mato Grosso (S limit of range unclear). Alleged records farther E (to lower R Xingu) appear to refer to mislabelled specimens.



**Descriptive notes.** 28-29 cm; male 78.5-86 g, female 74-89 g. Large but relatively slim woodcreeper with long tail, laterally compressed, straight bill of medium length. Adult has dark buffy face with indistinct scaling, diffuse supercilium; strongly rufescent forehead and crown, blending to rufous-brown on nape and back, and cinnamon-rufous to rufous-chestnut on wings, rump and tail, crown feathers with obscure buffy shaft streaks and obvious black tips (producing weakly barred pattern), back with a few, fine shaft streaks but upperparts and wings largely unmarked; primary tips dusky; throat and underparts dull buffy with olive cast,

tending more towards ochraceous on belly, breast with faint buffy shaft streaks (usually fine), belly and flanks barred narrowly and inconspicuously with dusky; underwing-coverts ochraceous buff; iris light grey to brown; bill dusky grey to black, lower mandible sometimes paler; legs and feet grey. Distinguished from race *concolor* of *D. certhia* mainly by rufous cap, black bill, fine streaking on breast. Sexes similar. Juvenile is more reddish above, more ochraceous below, with tendency towards dark spotting along edges of breast feathers resulting in subtle mix of streaking and barring; some birds more boldly streaked below, possibly reflecting immaturity. Voice. Song, given chiefly at dawn, but probably also at dusk, from perch high in forest, a rolling series of c. 20 similar notes on roughly same pitch, very like that of *D. picumnus* but possibly shorter in total duration. Various calls described as "wh kai", "kaihh-jeep" and snarling.

**Habitat.** Humid forest, both *terra firme* and on floodplains. Generally in interior of primary forest, but visits edges and possibly also older second growth. Amazonian lowlands, to c. 300 m.

**Food and Feeding.** Diet undescribed; presumably mostly arthropods. Regular attendant at army-ant swarms, and probably associates at least at times with mixed-species flocks. Forages primarily from understorey to subcanopy. Brief observations suggest that diet and foraging behaviour over ants are similar to those of *D. picumnus*; most observations over swarms have involved single individuals. Waits on large vertical trunks, at heights below 2 m, for prey flushed by ants; takes items largely by sallying to palm fronds and leaves, less frequently to ground, trunks, vines or mid-air; gleans prey from same substrates slightly less frequently. Competes with large antbirds (Thamnophilidae) when near ground, where forages somewhat less frequently than does *D. picumnus* near Manaus, Brazil (in absence of large antbird competitors). Occasionally supplanted by more aggressive *Xiphorhynchus guttatus*, and, in turn, attacks the smaller *Dendrocincla*. Away from ant swarms, remains relatively high up (6-13 m in one study) and on large trunks. That gleaning may be more important in this species than in some congeners suggested by its comparatively slimmer bill relative to those of most others.

**Breeding.** Nothing published on nest, eggs or any other aspect of breeding biology. One bird in breeding condition in late Sept in Mato Grosso.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. A rarely seen and little-known species. Uncommon to fairly common at some sites, but possibly local; occurs in a region that is ornithologically poorly known. Does not range so far S as do many endemics of the Madeira/Tapajós region; S limit of range unknown, but unrecorded in Bolivia. Recent observations mainly from two sites: Borba, on R Madeira, and Amazonia National Park, on R Tapajós, but is probably widespread in area



between the lower reaches of these two rivers. Believed to be highly sensitive to human disturbance. An indicator of tropical lowland evergreen forest in S Amazonia.

**Bibliography.** Anon. (2003a, 2003c), Cory & Hellmayr (1925), Dubs (1992), Haller (1992), Hellmayr (1909a, 1910), LeCroy & Sloss (2000), Marantz (1997), Meyer de Schauensee (1966), Oren & Parker (1997), Pinto (1938, 1978), Ridgely & Tudor (1994), Sick (1993), Sneath (1914, 1926), Stotz *et al.* (1996), Willis (1982d).

## 23. Black-banded Woodcreeper

### *Dendrocolaptes picumnus*

**French:** Grimpur varié **German:** Dunkelschnabel-Baumsteiger **Spanish:** Trepatroncos Variable  
**Other common names:** Cross-barred Woodcreeper (*transfasciatus*); Pale-billed Woodcreeper (*“pallascens”* group)

**Taxonomy.** *Dendrocolaptes Picumnus* M. H. K. Lichtenstein, 1820, “Cayenne”.

Apparently forms a superspecies with *D. hoffmannsi* and *D. platyrostris*, to which closely allied based on vocal and behavioural characters combined with biogeographical patterns. Races form three groups, occurring in distinct biogeographical regions and differing in morphology: “*picumnus* group”, also including *validus* and strikingly different *transfasciatus* (latter sometimes treated as a full species), is primarily Amazonian, but apparently with recent invasion into N Andes and mountains of S Central America (*multistrigatus* and *costaricensis*); montane “*puncticollis* group” (also including *seileri* and *olivaceus*) occurs at fringes of species’ range; “*pallascens* group” (with *casarezi*), found in Chaco region, is regarded by some as constituting a separate species. Single record from N Argentina (E Formosa) may be referable to race *pallascens*. Described race *veraguensis* (W Panama) considered inseparable from *costaricensis* and synonymized with it; purported race *extimus*, known only from type locality (R Alto Paraná, in SE Paraguay), is inseparable from *pallascens* and described from a series of specimens that were probably mislabelled; larger size upon which race *casarezi* described not supported by recent study. Has apparently hybridized intergenerically with *Hylexetastes stresemanni* in W Brazil, one of few cases of possible hybridization in suboscines. Ten subspecies recognized.

#### Subspecies and Distribution

*D. p. puncticollis* P. L. Sclater & Salvin, 1868 - highlands of S Mexico (Chiapas), C Guatemala and W Honduras.

*D. p. costaricensis* Ridgway, 1909 - subtropical to lower temperate zones of highlands in C & SE Costa Rica and Pacific slope of W Panama.

*D. p. multistrigatus* Eyton, 1851 - subtropical to lower temperate zones in Perijá Mts and Andes of Colombia (S to Cauca) and NW & W Venezuela (Zulia, N Barinas S to Táchira).

*D. p. seileri* Hartert & Goodson, 1917 - tropical and subtropical zones in foothills and highlands of N Colombia (Santa Marta region) and coastal range of N Venezuela (Falcón E to Sucre and N Monagas).

*D. p. validus* Tschudi, 1844 - lowlands and foothills of W Amazonia, both N & S of Amazon, in SE Colombia, E Ecuador, E Peru, N Bolivia and W Brazil (I: to R Negro and R Madeira, and S to Mato Grosso).

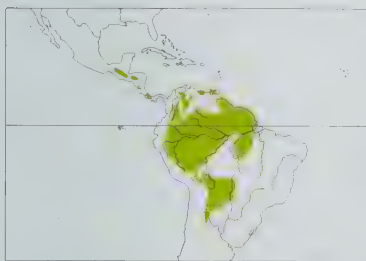
*D. p. picumnus* M. H. K. Lichtenstein, 1820 - lowlands of N Amazonia, N of Amazon, in S & E Venezuela, the Guianas and N Brazil (R Negro E to Amapá).

*D. p. transfasciatus* Todd, 1925 - Amazonian Brazil, S of lower Amazon, from R Tapajós E to R Xingu and S to N Mato Grosso.

*D. p. olivaceus* J. T. Zimmer, 1934 - E foothills of C Bolivian Andes (La Paz, Cochabamba, Santa Cruz).

*D. p. pallascens* Pelzel, 1868 - Chaco region of E Bolivia, S Brazil (W Mato Grosso, W Mato Grosso do Sul) and W Paraguay.

*D. p. casarezi* Steullet & Deauter, 1950 - subtropical zone of E Andean foothills in NW Argentina (Jujuy, Salta, Tucumán).



**Descriptive notes.** 24-30.5 cm; male 67-89 g and female 72-98 g (Amazonia), male 61-62 g and female 59-64 g (Central America), male 47-73 g and female 48-73 g (“*pallascens* group”). Large, slim woodcreeper with long tail, nearly straight bill of medium length. Nominant race has dusky face and neck with buffy to tawny streaking, diffuse supercilium and eyering; dark brown forehead, crown and nape that contrast with olive-brown back, scapulars and wing-coverts, crown feathers with darker edges and buff to tawny streaking that expands distally, back with fine shaft streaks and indistinct dark barring, wing-covert

feathers with pale shaft streak and dark subterminal band; rump, wings and tail rufous-chestnut, primary tips dusky; throat whitish to deep buff with indistinct streaking or mottling; breast boldly streaked buff on olive-brown background with underlying pattern of spotting or barring, belly, flanks and undertail-coverts buffy-brown with bold black barring; underwing-coverts slightly brighter, barred blackish; iris dark brown; bill black, edges and base of lower mandible pale horn, grey or brown; legs and feet brown to greenish-grey. Distinguished from often sympatric and similarly plumaged *Xiphocolaptes promeropirhynchus* by smaller size, smaller and straighter bill, and lack of dark malar-stripe. *Dendrocolaptes certhia*, sympatric in Amazonia, is smaller and lacks streaking on crown and breast. *Dendrocolaptes hoffmannsi* nowhere sympatric, similar only to “*pallascens* group” but has dark bill. Races most similar to *D. platyrostris* are those in Amazonia, which are larger and generally have a brownish crown; race *transfasciatus* has black crown but streaking on breast is bolder and black bars on belly do not cross feather shafts. No species of *Xiphorhynchus* is barred below, and *Xiphocolaptes major* is much larger and heavier-bodied than is sympatric race *pallascens*. Female differs from male only in larger size, sleeker head plumage. Juvenile is similar to adult, but plumage fluffier, throat more sealy, streaking on back and underparts bolder, pattern of spotting underlying breast streaks bolder, underparts more weakly barred, and crown darker overall, more spotted than streaked and often with tips of feathers darker. Racial variation complex but three groups emerge based on plumage patterns: within “*picumnus* group”, race *validus* is very similar to nominate, differing in brownish (rather than black) upper mandible that contrasts with paler lower mandible, lacks barring above, breast more cleanly streaked and without underlying barring; *transfasciatus* is distinctive, crown blackish, more boldly streaked with golden above and with white below, back and wing-coverts weakly barred, belly spotted rather than barred (black bars on feathers not crossing shafts); *multistrigatus* is smaller than previous races, less obviously streaked above, more finely barred below, streaking on breast more extensive but narrower; *costaricensis* closely similar to *multistrigatus* but underparts more extensively barred, breast less extensively streaked and with underlying pattern of spotting. Races of “*puncticollis*

group” with narrow, black-bordered streaks on otherwise unmarked breast, barred portion of belly more limited in extent; *puncticollis* has crown blackish and only finely streaked, bill much longer and slimmer than any other *Dendrocolaptes*; *seileri* is similar to *puncticollis* but bill shorter and paler, crown browner, and streaking below more extensive (continuing to upper belly); *olivaceus* is closely similar to *seileri* but underparts more olivaceous, crown lighter brown, back more strongly streaked, and streaking on both crown and breast more buffy (less whitish). Members of “*pallascens* group” differ strikingly from others by rufescent coloration with minimal streaking on both crown and breast, bill pale olive to bluish-horn, belly indistinctly barred; coloration below markedly variable individually, from bright rusty to plain brown; *casarezi* differs from *pallascens* only in slightly larger size, longer bill. **Voice.** Song, given primarily at dawn and dusk (rarely during day), in Amazonia a loud series 2-5 seconds long of 15-20 rapidly delivered liquid notes, usually on same pitch, sometimes falling away at end, “kie-ie-ee-...ie-ee-eu-eu-er”, “glü glü glü glü glü” or “whi-whi-whiwhiwhi”, differs from *D. certhia* song mainly in constant frequency and more notes; in N Venezuela similar but noticeably descending, slower, with fewer notes; in S Mexico described as high-pitched, descending chatter; when agitated, songs often run together into long strings of notes. Both members of pair sing, often near roost sites from concealed perch in upper levels of forest. Calls include short whinny, nasal “wrenh” with upward inflection, simple “oi” falling in pitch, squealing “squeeh” during fights, snarling “chauh-hh-eesk” in alarm, grunting series of “uk-uk-uk” at competitors, various rattles; soft “peep-songs” by fledged young.

**Habitat.** Occurs in a complex array of forested habitats, some races exclusively in tropical lowlands, others in upper tropical to lower temperate zones of highlands. In Amazonian lowlands frequents primarily terra firme forest and floodplain-forest, less often flooded forest, forests on sandy soils, or forested savanna; very rarely, enters mangroves. Elsewhere, occurs in a variety of deciduous and semi-deciduous forests (both dry and humid), humid evergreen forest, cloudforest; also pine (*Pinus*) and pine-oak (*Pinus-Quercus*) woodland in N of range (*puncticollis*). Frequents chiefly interior of mature forest, often with relatively open understorey; regularly also in older second growth and forest edge, and rarely adjacent plantations or trees within clearings. Amazonian forms to c. 1900 m along E slope of Andes in Ecuador and to 1300 m in Peru; montane forms most frequent at middle elevations, but to 2800 m in South America and 3000 m in Central America; 1000-3000 m (rarely to 750 m in winter) in S Mexico to Honduras, 900-2100 m in Costa Rica and Panama, 1300-2800 m in Colombian Andes, and 450-2700 m in N Venezuela.

**Food and Feeding.** Diet mostly arthropods, but small vertebrates also taken. Over ants, preys largely on cockroaches (Blattodea), katydids (Tettigoniidae), grasshoppers (Acrididae) and winged ants, also on various types of beetle, scorpions, spiders, centipedes (Chilopoda), crickets (Gryllidae), caterpillars, and other invertebrates. Small lizards apparently most common vertebrate prey, but frogs also taken. Stomach contents included cockroaches, *Camponotus* ants, bees, beetles, scorpions, snails. Most prey relatively small; larger items of 30-50 mm also regularly taken, with records of several centipedes and a grasshopper longer than 100 mm, these usually battered against tree trunks before being swallowed. Amazonian populations forage extensively in association with swarms of army ants (primarily *Eciton burchellii*), but also encountered regularly alone and occasionally with mixed-species flocks. Montane birds rarely seen at all, but probably rely to much lesser degree on ants. Over 85% of encounters at a Guianan site involved solitary birds, with only 7% each for birds with flocks or over ants; likewise, only 5% of birds observed at site in SE Peru were with flocks. Usually singly or in pairs, sometimes in threes; rarely, 4-5 birds seen at same ant swarm following breeding season. In Amazonia, follows ant swarms almost daily and wanders widely in search of them; as most ant-following birds, active at swarms for much of day. Usually forages in undergrowth over swarms, where activity concentrated within 6 m of ground, but regularly follows ant probes into subcanopy; c. 25% of foraging within 1 m of ground (especially 10-40 cm), with sallies more successful from lower perches than from higher ones; excluded from optimal foraging locations within 3 m of ground by larger *Hylexetastes perrotii*. Perches mostly on near-vertical trunks 5-50 cm in diameter, waiting for extended periods of time before sallying up to 2 m (occasionally to 3 m, rarely farther) to capture prey. Nearly 30% of prey at ant swarms taken from ground (slightly less in presence of *Hylexetastes*, more in its absence), with 23% taken from foliage, especially palm fronds, and 8% in air; in another study, over 50% of prey picked from trunks, and majority of rest taken from foliage. Gleaning or pecking used more frequently than by *D. certhia*, less than by *D. sanctithomae*; most gleaned prey taken from trunks, logs or vines, very little from leaves, twigs, the ground or other substrates. Seen to inspect palm fronds, rotten snags, holes in trunks, epiphytes, and termite (*Isoptera*) nests, but rarely visits downed logs, inspects loose debris, rummages in leaves, or digs into dead wood or into termite or bee nests. Regularly attracted to emergences of winged ants or activity associated with ant swarms. Pair-members often antagonistic towards each other, with female apparently dominant over male; additional individuals generally chased off soon after appearance at swarms. Agonistic encounters with conspecifics and other dendrocolaptids frequent. Regularly supplants or displaces both antbirds (Thamnophilidae) and smaller woodcreepers, especially *Dendrocincla* species (*D. fuliginosa*, *D. merula*) and *D. certhia*, less frequently *Xiphorhynchus* species; supplanted by larger dendrocolaptids, especially *Hylexetastes perrotii* and *Nasica longirostris*, and occasionally by smaller *Dendrocincla* and *Xiphorhynchus* (especially highly aggressive *X. guttatus*). Away from ants, often forages at mid-levels or in subcanopy, where prey both gleaned from bark or taken by sallying; often sluggish and rather inconspicuous.

**Breeding.** Breeds in May-Jun in N Venezuela and Mar-May in Guyana; nest-building in Apr in Costa Rica; fledged young in Nov-Dec in Colombian Andes and early Jul to early Jan near Manaus (Brazil); birds in breeding condition in mid-Feb in Surinam, Apr in Mexico, late Sept in Amapá (Brazil) and late Jul in Paraguay; in non breeding condition in Mar at Cerro de la Neblina (S Venezuela), late Apr in Amapá and late Sept in Mexico. Molt appears to follow breeding, Jun-Dec (Central America) and Nov-Feb (C Amazonia). Paired throughout year. Nest in tree cavity; mean territory size 21 ha in mature floodplain-forest in SE Peru. Clutch 2 white eggs, 29 × 21 mm; parental care and territory defence apparently by both parents; young remain with parents for 3-4 months after fledging.

**Movements.** Resident in most of range, but may move downslope after breeding at N sites.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common in most of Amazonian range, in N Central America and in parts of the Chaco; scarce to rare in most of montane range (Costa Rica, Panama, Colombia, Venezuela, Bolivia), especially near upper elevational limit; also rare along S fringe of Amazonia and in S Paraguayan Chaco. Densities in C Amazonian Brazil estimated at 1-8 pairs and additional 1-4 floaters/100 ha (slightly higher following breeding season); in SE Peru 2 pairs/100 ha in mature floodplain-forest, but only 0-25 pairs/100 ha in adjacent late-successional forest. Pairs occupy somewhat overlapping territories, from which they wander well into neighbouring territories in search of ant swarms. At least some populations believed to require nearly continuous forest, and thus highly sensitive to human disturbance. Disappears from small forest fragments, but numbers may be only slightly reduced in larger fragments and selectively logged forest. Occasionally crosses barriers of unsuitable habitat to recolonize fragments that still harbour active ant swarms.

**Bibliography.** Anon. (1998a), Berlepsch (1908), Berlepsch & Stolzmann (1896), Blake (1962), Boucard (1878), Brodkorb (1941), Carraker (1910, 1935a), Chebez & Heinonen (1987), Chubb (1921), Cohn-Haft *et al.* (1997),



Cory & Hellmayr (1925), Davis (1993), Dubs (1992), Edwards (1972), Esteban (1948), Fjeldsa & Krabbe (1990), Foster *et al.* (1994), Griseom (1927a), Gyldestolpe (1945a, 1945b), Hafler (1992), Harper (1989), Hartert & Goodson (1917), Haverschmidt (1977), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Howell & Webb (1995a), Karr, Robinson *et al.* (1990), Land (1970), Laubmann (1940), Marantz (1997), Menegaux & Hellmayr (1906a), Meyer de Schauensee (1950a, 1964, 1966), Meyer de Schauensee & Phelps (1978), Miller *et al.* (1957), Morales *et al.* (2000), Narosky *et al.* (1983), Niethammer (1956), Novaes (1974), Olrog (1959a, 1963b), Oniki & Willis (1972, 1982), Parker & Bailey (1991), Parker *et al.* (1982), Paynter (1954), Pelzeln (1868-1871), Penard & Penard (1908-1910), de la Peña (1988), Peres & Whittaker (1991), Peterson & Chalif (1973), Phelps & Phelps (1963), Pinto (1938, 1978), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1889, 1909, 1911), Salvin & Godman (1883), Schäfer & Phelps (1954), Selater & Salvin (1879), Servat (1996), Short (1975), Sick (1993), Slud (1964), Sneath (1925), Snyder (1966), Steullet & Deautier (1950), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Taczanowski (1884), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1994), Thiollay & Jullien (1998), Todd & Carriker (1922b), Wetmore (1972), Willard *et al.* (1991), Willis (1977, 1982d, 1992c), Zimmer, J.T. (1934c), Zimmer, K.J. & Hilty (1997), Zimmer, K.J., Parker *et al.* (1997).

## 24. Planalto Woodcreeper

### *Dendrocolaptes platyrostris*

**French:** Grimpar des plateaux    **German:** Planaltobaumsteiger    **Spanish:** Trepatroncos Oscuro

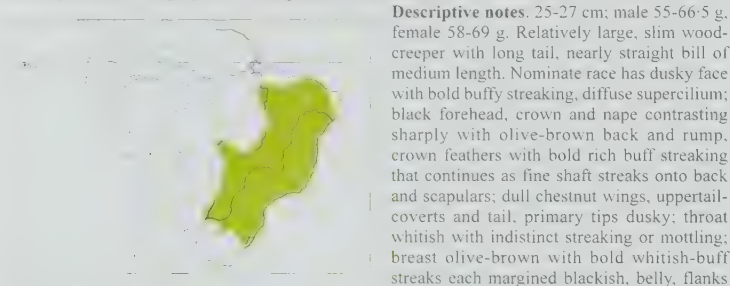
**Taxonomy.** *Dendrocolaptes platyrostris* Spix, 1824, Rio de Janeiro, Brazil.

Apparently forms a superspecies with *D. hoffmannsi* and *D. picumnus*, and sometimes considered conspecific with latter on grounds of morphological similarity. Race *intermedius* exhibits some vocal differences from nominate, but plumage characters of the two intergrade where they come into contact in SE Brazil (E São Paulo, S Goiás, Minas Gerais) and S Paraguay. Two subspecies recognized.

#### **Subspecies and Distribution.**

*D. p. intermedius* Berlepsch, 1883 - NE, C & SC Brazil, from SE Pará (Marabá), Maranhão, Ceará and W Pernambuco S to S Mato Grosso, Mato Grosso do Sul, Minas Gerais and Bahia; also adjacent E Paraguay (rarely farther W).

*D. p. platyrostris* Spix, 1824 - E & SE Brazil (S Bahia and E Minas Gerais S to Rio Grande do Sul), also adjacent SE Paraguay and NE Argentina (Misiones, N & E Corrientes, E Formosa, E Chaco).



and undertail-coverts buffy-brown, finely barred blackish; ground colour both above and below highly variable, from olive to reddish-brown, even in birds from same locality; iris brown, orbital skin yellow; bill black, lower mandible sometimes light or brownish at tip; legs and feet greenish-grey to dark brown or black. Distinguished from sympatric and similarly plumaged *Xiphocolaptes albicollis* by smaller size, smaller bill, slimmer body, more heavily streaked back, and lack of boldly white throat. Races of *D. picumnus* that are most similar occur in Amazonia, where size larger and crown brownish rather than black (except *D. p. transfasciatus*, which has breast more boldly streaked and belly with black bars that do not cross feather shafts). Female differs from male in slightly larger size, sleeker head plumage. Juvenile undescribed. Birds from far southern part of range of nominate race average darker both above and below. Race *intermedius* is paler and more cinnamon overall, with crown dusky brown or olive, back virtually unstreaked, and wings, rump and tail slightly lighter, more rufous. Plumage characters, especially coloration of crown, intermediate in region of contact between nominate and *intermedius* (E São Paulo, S Goiás, Minas Gerais & S Paraguay). Voice. Song, given mostly at dawn and dusk, a series 3-8 seconds long of relatively shrill “whik”, “weck” or “chree” notes at c. 5 per second, notes often on same pitch, but sometimes rising or falling slightly, and fading towards end, e.g. “Ji.ji.ji.ji.jie.je.je...” or “hee, hee, he, he, hey,

hay, huh”, overall pattern similar to that of *D. picumnus* but possibly shriller, duration longer, and notes given more rapidly; when agitated, songs often run together into long strings of notes; *intermedius* song a shorter series of “yourit” or “urit” notes that recalls song of *D. sanctithomae*. Various calls include rattling, a grunting “i-i-i”, and other “squirrel-like” grunts.

**Habitat.** Primarily humid lowland and montane forests along Atlantic coast; race *intermedius* largely in semi-deciduous woodland, Mauritius palm swamps, and gallery forest within *coatinga*, *cerrado* and Chaco regions (occurs both farther N and farther inland, where climate on average drier). Frequents interior of mature forest, second growth and edges, but seems to avoid borders, at least at some sites; occasionally visits gardens, plantations, and even clearings adjacent to forest. Lowlands into foothills, regularly to 1300 m, rarely to 2100 m.

**Food and Feeding.** Diet mostly arthropods, but small vertebrates and occasionally vegetable matter also taken. Stomach contents included spiders, a variety of ants and beetles, bugs (Hemiptera), earwigs (Dermaptera), flies, ants, lepidopteran larvae, and dragonflies (Odonata); observed also to take bees, and even a small frog. Regularly associates with mixed-species flocks during non-breeding season, and frequently with army-ant swarms, but apparently less dependent than its congeners on either; seemingly less conspicuous and less often with flocks when breeding, and significantly more frequent in flocks with Cinereous Antshrike (*Thamnomanes caesioides*) than in those without them at one site in Espírito Santo (Brazil); considered a “professional” ant-follower by some authors, but regularly seen away from ants (more so than *D. picumnus*). Often occurs singly, sometimes in pairs, at ant swarms, where forages mostly in undergrowth, with most prey taken in sallies up to c. 1 m from perch, often to low foliage or ground. Over swarms, female dominant over male; supplants smaller antbirds (Thamnophilidae), tanagers (Thraupidae), also other dendrocolaptids (especially *Dendrocincla fuliginosa* and *D. turdina*), but in turn is supplanted by *Xiphorhynchus guttatus*. Away from ants, forages from mid-levels into subcanopy, or even canopy, usually by hitching up trunks and sallying out after (or less frequently, pecking at) prey from surface of vines, foliage, or medium-sized trunks and limbs; sallying likely important over ant-swarms, but pecking or gleaning probably more important away from ants. Prefers trees with rough bark over those with smooth bark, and trunks covered with mosses over those covered with lichens; occasionally peers into bromeliads.

**Breeding.** Little published on breeding biology. Birds with worn feathers in Sep (Minas Gerais, Brazil). Birds in breeding condition or with brood patches in Oct-Dec and moulting flight-feathers in Nov-Mar in S Brazil, also feeding nestlings in early Oct (São Paulo); in breeding condition in Nov in Paraguayan interior; nest-building observed in mid-Sept in NE Argentina, where only 2 of 23 specimens in late Mar to mid-Apr approaching breeding condition. Two nests described, both with entrance 6-8 m up in natural cavity in trunk, one in laurel (*Nectandra*), other in *Centroleobium tomentosum* growing within open wood of botanical garden, with entrance measuring 40 × 7 cm; bark fragments from nearby trees (*Fagara rhoifolia*, *Diatenopterix sorbifolia*) observed being taken to latter nest. Clutch size and eggs not documented; at one nest both members of pair cared for young, and food-delivery rate varied from 2-5 to 1-6 visits per hour (more frequent in morning, less so during midday), most food items were spiders. One ringed individual recaptured after more than 6 years.

#### **Movements.** Resident.

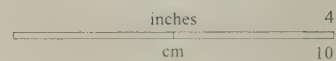
**Status and Conservation.** Not globally threatened. Uncommon to fairly common in remaining habitat in core of Brazilian range and in Alto Paraná of SE Paraguay; scarce to rare at fringes of range, e.g. in rest of Paraguayan range and at some Brazilian sites (N Pantanal, SW Rio Grande do Sul). Occurs in Serra dos Órgãos, Itatiaia and Aparados da Serra National Parks, in Brazil. Suggested to be only moderately sensitive to human disturbance, which may explain continued presence at many somewhat degraded sites. In addition to primary forest, occurs in both selectively logged forest and tall second growth. Although capable of surviving at least in the short term in forest fragments of moderate size, tends to disappear from those smaller than 200 ha, and populations may be depressed even in larger fragments lacking army ants; disappeared from an isolated fragment of 145 ha in less than 15 years, but known to have survived in moderate numbers in much smaller fragments over a longer period of time. An indicator species for gallery forest in C South America.

**Bibliography.** Aleixo (1997), Aleixo & Galetti (1997), dos Anjos *et al.* (1997), Belton (1984), Bertoni (1901), Brodtkorb (1941), Cavalcanti & Marini (1993), Christiansen & Pitter (1997), Cintra & Yamashita (1990), Cory & Hellmayr (1925), Darrieu & Camperi (1990), Davis (1945, 1946), Dubs (1992), Esteban (1948), Goerck (1999a), Hayes (1995), Hayes & Argaña (1990), Holt (1928), Ihering (1898), Laubmann (1940), Lopes *et al.* (1980), Lynch (1902), Marantz (1997), Marini & Couto (1997), Marini *et al.* (1996), Maurício & Dias (1998, 2001), Meyer de Schauensee (1966), Mitchell (1957), Narosky & Yzurieta (1993), Narosky *et al.* (1983), Olmos (1993), Olrog (1959a), Oniki (1980, 1981), de la Peña (1988), de la Peña & Rumboll (1998), Pinto (1935, 1936, 1938, 1978), Pinto & Camargo (1961), Piratelli *et al.* (1996), Reinert *et al.* (1996), Ridgely & Tudor (1994), do Rosário (1996), Saibene (1995), Schubart *et al.* (1965), Scott & Brooke (1985), Short (1975), Sick (1993), Soares & dos Anjos (1999), Storer (1989), Stotz (1993), Stotz *et al.* (1996), Wetmore (1926), Willis (1979b, 1982d, 1983c), Willis & Oniki (1991, 2001a, 2001b).











# Genus *XIPHORHYNCHUS* Swainson, 1827

## 25. Lesser Woodcreeper

### *Xiphorhynchus fuscus*

**French:** Grimpard brun **German:** Blasskehl-Baumsteiger **Spanish:** Trepatroncos Enano

**Taxonomy.** *Dendrocopus fuscus* Vieillot, 1818, near Rio de Janeiro, Brazil. Formerly placed in genus *Lepidocolaptes*, but recent molecular studies indicate that it is better placed in present genus, as suggested also by both behavioural observations and morphological characters. Molecular data suggest that it is apparently sister to a combined *X. spixii*/*X. elegans* and *X. pardalotus*/*X. ocellatus* clade. Four subspecies recognized.

#### Subspecies and Distribution.

*X. f. atlanticus* (Cory, 1916) - NE Brazil from Ceará and Paraíba S to Alagoas.  
*X. f. brevisrostris* (Pinto, 1938) - arid interior of NE Brazil (W Bahia).  
*X. f. tenuirostris* (M. H. K. Lichtenstein, 1820) - coastal E. Brazil from C. Bahia S to R. Doce (Espírito Santo).  
*X. f. fuscus* (Vieillot, 1818) - SE Brazil from S. Goiás, E Minas Gerais and Espírito Santo (R. Doce) S to NE & C. Rio Grande do Sul, also S & SE Paraguay and NE Argentina (Misiones).

**Descriptive notes.** 15-18.5 cm; 15.5-25 g. Small, slim woodcreeper with proportionately large head, steep forehead, relatively long, slim, somewhat decurved bill. Nominative race has broad creamy to yellowish-buff supercilium, contrasting with well-defined dusky patch on auriculars, often pale eyering; crown and nape blackish-brown, forehead and crown with small but prominent yellowish-buff to cinnamon spots, these becoming more streak-like on nape and side of neck; back and wing-coverts olive-brown to reddish-brown, streaks of nape extending (often weakly) to upper back, where thinly bordered blackish; rump, remiges

and tail rufous-chestnut, outer webs of primaries darker, tips blackish; unmarked creamy-yellow throat blends to smoky brown on breast and belly, breast, sides and upper belly boldly marked with elongate scales or rounded streaks each with blackish-brown border, eventually passing to weak streaking on a clay-brown background; undertail-coverts and underwing-coverts cinnamon; iris dark brown; upper mandible blackish-brown to dark horn (often darker base), lower mandible pinkish to white, sometimes darker tip; legs and feet olive-grey to bluish-grey. Distinguished from *Lepidocolaptes squamatus* and *L. falcinellus* by smaller size, spotted crown, more extensively streaked back, underparts buffier with less boldly margined streaks. Sexes similar. Juvenile differs from adult in more weakly defined ventral spotting, apparently shorter bill. Race *tenuirostris* is similar to nominate but larger, with buff spots below having weaker, more brownish edges; relative to both nominate and *tenuirostris*, *atlanticus* is much brighter ochraceous below, with more obvious dark brown edgings on lower throat, and weaker borders to broader streaks, together resulting in more blurred appearance, bill possibly longer; *brevisrostris* is palest race, pale yellowish below and more cinnamon on wings and tail, has shorter bill than *atlanticus*. **VOICES.** Song a sharp rattle of 3-6 seconds, with several slow "chip" notes accelerating to rapid trill, and slowing again at end, e.g., "kwip-kwip-kwip-kwip-kwip-kwip," or "chit, chit, chit, chee-ee-ee-ee-ee-ee-ee, chit, chit-chit"; song of race *atlanticus* noticeably different in quality, initial notes sharper and fewer, middle trill clearly ascending. Calls include doubled "peep, peep" and single "speel" or "wik".

**Habitat.** Variety of forest types. Mainly lowland rainforest and humid montane forest in much of range; also *Araucaria* forest in S, and semi-deciduous and gallery forests at drier sites farther inland. Frequents interior of mature forest, older second growth, forest edge; occasionally younger second growth and gardens adjacent to forest. Occurs in both tropical and subtropical zones, primarily in lowlands and foothills, regularly to 1200 m; less frequently in mountains to 1500 m, possibly higher.

**Food and Feeding.** Diet predominantly, if not exclusively, arthropods. Stomach contents of adults in one study mostly beetles (80% of diet), but also cockroaches (Blattodea; 14%) and ants (6%); in another study mostly spiders and various types of planthoppers (Homoptera) and bugs (Hemiptera), with lesser numbers of beetles, ants, Lepidoptera, and a pseudoscorpion. Encountered alone and in association with mixed-species flocks in about equal frequency; less frequently with army-ant swarms. A regular flock associate, both singly and in pairs, and sometimes considered a core species, together with White-eyed Foliage-gleaner (*Automolus leucophthalmus*) and Red-crowned Ant-tanager (*Habia rubica*); tends to drop out of flocks during breeding season; significantly more frequent in flocks with Cinereous Antshrike (*Thamnomanes caesioides*) than in those without them at one site in Espírito Santo (Brazil). Forages on trunks, less frequently branches, from understorey to mid-levels, occasionally into subcanopy or even canopy; usually below 5 m, and almost always within 15 m of ground. Despite preference for using larger trees than average, most foraging is on relatively slim sections of trunks (mean diameter less than 15 cm in one study). Rather high degree of overlap with both larger *Xiphocolaptes albicollis* and smaller *Sittasomus griseicapillus* in height and diameter of trunks used at one site. Shows significant preference for trees with rough bark, and trunks covered with mosses preferred to those covered with lichens; also uses bromeliads and other epiphytes. Hitches up trunks, peering at vines, epiphytes, clusters of dead leaves, or branches; often ascends only short distance before moving on to next tree. Gleaning and pecking are most common techniques. Relatively infrequent at ant swarms (*Eciton burchelli*, less frequently *Labidus praedator*), where forages mostly between 0.4 m and 9 m above ground using techniques similar to those used away from ants, but has also been seen to sally to a nearby leaf, and plunge to capture falling prey.

**Breeding.** Gonadal condition, and presence of brood patches and cloacal protuberances, suggest breeding in Sept-Dec throughout range; nests with eggs in Oct and with nestlings in early Sept in Brazil, and juveniles in late Oct and early Nov in Brazil and Paraguay. Nest in tree cavity, one in young second growth and another in small fragment of semi-deciduous forest; only one nest de-

scribed in detail, in trunk of small leguminous tree (Mimosoideae), entrance a slit 75 × 3.5 cm, lower end 1 m above ground, chamber 10 cm below entrance, nest cup lined with small dried leaves and bark fragments. Clutch 2 white eggs, rarely 3, average 25 × 18 mm; 5 males in breeding condition lacked incubation patch, suggesting that male may not share in incubation; nestlings were of different sizes and in different stages of feather development, suggesting asynchronous hatching; ventral feathers appear to be last to develop; stomach contents of nestlings mostly spiders and orthopterans, also a beetle larva. An individual ringed in São Paulo recaptured nearly 4 years and 6 months later.

**Movements.** Presumably resident throughout range; significantly lower encounter rates in non-breeding season at S limit of range in Brazil (Rio Grande do Sul) suggest possibility of either local movement or reduced activity as a result of colder weather.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout much of Brazilian range, but rare to uncommon along S & SW fringes; uncommon and local in Rio Grande do Sul. Uncommon and local in Paraguay, especially in SW (Neembucú region). Has been suggested to be highly sensitive to human disturbance, but able to survive in moderate numbers in selectively logged forest, tall second growth, and fragments of moderate size. Though sometimes fairly common in fragments of 40-60 ha, especially when these connected to continuous forest, numbers often much reduced in smaller, more isolated patches, and usually disappears altogether from fragments smaller than 20 ha; was also absent from a 200-ha fragment of early-successional forest. Data from one study indicate that borders may be avoided at some sites. Home range suggested to be 250-300 m across at one site.

**Bibliography.** Aleixo (1997), Aleixo & Galetti (1997), dos Anjos & Boçon (1999), dos Anjos *et al.* (1997), Belton (1973, 1984), Bencke & Kindel (1999), Berla (1946), Bertoni (1901), Brooke (1983), Cândido (2000), Christiansen & Pittier (1997), Chubb (1910), Cory & Hellmayr (1925), Dabbene (1912), Davis (1945, 1946), Develley & Peres (2000), Durães & Marini (2003), Esteban (1948), Euler (1900), García & da Silva (1997), Goerck (1999a), Hayes (1995), Hellmayr (1929b), Höfling & Lencioni (1992), Holt (1928), Lamm (1948), Lopes *et al.* (1980), Machado (1999), Madroño, Clay *et al.* (1997), Madroño, Robbins & Zyskowski (1997), Maldonado-Coelho & Marini (2000), Marini & Couto (1997), Marini *et al.* (2002), Melo-Júnior *et al.* (2001), Menegaux & Hellmayr (1906a), Monteiro & Mattos (1984), Narosky *et al.* (1983), Oniki (1981), Oniki & Willis (2001), Parker & Goerck (1997), Parrini *et al.* (1999), de la Peña (1988), de la Peña & Rumbold (1998), Pinto (1935, 1938, 1954a, 1978), Pinto & Camargo (1961), Reinert *et al.* (1996), Ridgely & Tudor (1994), do Rosário (1996), Scott & Brooke (1985), Sick (1993), Soares & dos Anjos (1999), Storer (1989), Stotz (1993), Stotz *et al.* (1996), Willis (1979b, 1983d), Willis & Oniki (1981b, 2001b), Zimmer (1947).

## 26. Tschudi's Woodcreeper

### *Xiphorhynchus chunchotambo*

**French:** Grimpard de Tschudi **German:** Bartstreif-Baumsteiger **Spanish:** Trepatroncos de Tschudi

**Taxonomy.** *Dendrocolaptes Chunchotambo* Tschudi, 1844, Chanchamayo Valley, Junín, Peru. Molecular data support placement as sister to clade including *X. ocellatus* and *X. pardalotus*. Considered conspecific with *X. ocellatus* by most recent authors, but differs morphologically and genetically, supporting treatment by earlier authors as a separate species; race *napensis* allied with *X. ocellatus* by some authors, but external morphology supports original treatment as a race of present species. Three subspecies recognized.

#### Subspecies and Distribution.

*X. c. napensis* Chapman, 1924 - lower Andean slopes and adjacent Amazonian lowlands from S. Colombia (SE Nariño, W Caquetá) S to NE Peru (S to R. Marañón).  
*X. c. chunchotambo* (Tschudi, 1844) - lower Andean slopes in E & NE Peru (S of R. Marañón to Ucayali and Junín).  
*X. c. brevisrostris* J. T. Zimmer, 1934 - Andean foothills and adjacent lowlands in SE Peru and N & C Bolivia (La Paz and W Beni E to W Santa Cruz).

**Descriptive notes.** 21-24.5 cm; 30-38 g. A slim, medium-sized woodcreeper with bill relatively long, slim and noticeably decurved distally. Nominative race has face finely streaked whitish-buff and dark brown, supercilium weak or lacking; blackish-brown crown and nape with small teardrop-shaped buff spots, smaller on forehead and larger on nape; back and wing-coverts olive-brown, with fine buff streaks over much of back; rump and remiges rufous-chestnut, tail somewhat darker, edges of primaries olive-brown, tips dusky; throat pale buff to buffy whitish, blackish feather edges on lower throat (producing a scaly appearance), blackish malar stripe; underparts olive-brown, slightly paler than above, upper breast with bold teardrop-shaped buff spots with blackish edges, grading into elongate buff streaks on lower breast and belly that fade on lower belly and flanks, and reduced to a few fine shaft streaks on undertail-coverts; underwing-coverts ochraceous; iris ashy brown to dark brown; bill dark brown to blackish, lower mandible pale greyish; legs and feet greenish or grey to brownish. Very similar to *X. ocellatus* but crown spotted rather than streaked, back finely but conspicuously streaked, lower throat with bolder pattern of scaling, dark malar stripe, underparts extensively streaked instead of with limited spotting, throat paler, and overall coloration darker, more olivaceous. Differs from races of *X. elegans* in SE Peru (which have similarly weak streaks on back) by buffier throat, larger spotting on breast and different vocalizations; in Bolivia also by shorter, paler bill. Female is like male, but slightly smaller. Juvenile resembles adult, but underparts more heavily spotted, spots more poorly defined. Race *napensis* has crown spots smaller than nominate, streaking on back narrower and more linear, throat more richly coloured and more extensively scaled, belly less distinctly and less extensively streaked; *brevisrostris* is smaller and browner overall than nominate, streaks on back broader and more pronounced, those on underparts broader but more poorly defined, throat paler and largely unmarked, bill paler, slimmer, shorter and more deeply curved. **VOICES.** Song apparently given somewhat intermittently (often only few songs in a bout), primarily at dawn and dusk (less frequently during day, then often partial songs), in E Ecuador described as a fast, descending series of nasal notes with terminal ones sharply emphasized, "whe-whe-whe-whe-whe-chéchécheow"; either the descending series or the emphasized notes sometimes given alone, espe-

On following pages: 27. Ocellated Woodcreeper (*Xiphorhynchus ocellatus*); 28. Chestnut-rumped Woodcreeper (*Xiphorhynchus pardalotus*); 29. Spix's Woodcreeper (*Xiphorhynchus spixii*); 30. Elegant Woodcreeper (*Xiphorhynchus elegans*); 31. Striped Woodcreeper (*Xiphorhynchus obsoletus*); 32. Buff-throated Woodcreeper (*Xiphorhynchus guttatus*); 33. Cocoa Woodcreeper (*Xiphorhynchus susurrans*).



cially when excited. Typical call a sharp, but slightly slurred “kleer!”, also, a series 1-2 seconds long of 7-15 short, squeaky notes, “wik-di-di-di-di-di”, during territorial interaction in SE Peru. **Habitat.** Evergreen forest, primarily on lower Andean slopes, but also in adjacent lowlands. Principally montane evergreen forest and cloudforest, but *terra firme* forest, floodplain-forest and seasonally flooded forest, occasionally wooded swamps, frequented in lowlands; in Bolivia, also semi-deciduous forest in Andean valleys. Seems to prefer interior of mature forest, but also occurs in marginal habitats (mid-successional vegetation, second growth, thickets of *Guadua* bamboo, or forest edge) at some lowland sites. Apparently most common in upper tropical zone of Andean foothills, where it reaches 1800 m.

**Food and Feeding.** Presumably insectivorous, but diet not described in detail. Most prey relatively small (average 0.5 cm), but larger items to 4 cm in length also taken. Singletons, less frequently pairs, regularly associate with mixed-species flocks of forest understory. In one study, individually marked birds spent on average 75% of time with flocks, but total amount variable, 17-83% depending on individual. Daily movement likewise highly variable, with most birds shifting among two or more flocks, despite spending majority of time with primary flock. Tracking data further revealed not only that a “floater” moved over larger home range (despite moving shorter distance each day) than did territorial birds, but also that it spent less time with flocks despite trying to join as many as 8 different ones. Flocks frequented by this species moved through forest at c. 30 m every 10 minutes, significantly more rapidly than those frequented by *X. elegans*; this, however, appears to reflect preference to join flocks moving at this rate, rather than the species itself setting rate of flock movement. Only infrequently encountered at army-ant swarms. Forages while hitching up trunks and branches, primarily from understory to subcanopy. Most prey gleaned or picked from surface of trunks or limbs (c. 75% in one study), also taken by probing into live foliage (less than 10%), or into bark crevices, knotholes, palm fronds and dead leaves (less than 15% combined). Highly aggressive, even for a *Xiphorhynchus*, regularly beginning fights not only with subordinate species, but also with larger, dominant ones (e.g. *X. guttatus* and *X. elegans*); also attacks non-woodcreepers, especially foliage-gleaners of genus *Philydor*. High degree of overlap in diet and substrate use with both *X. elegans* and *X. obsoletus*, resulting in aggression at almost every encounter and interspecific territoriality, producing checkerboard pattern of distribution among flocks in SE Peru. Defends territories including 2 or sometimes more mixed-species flocks of forest understory. Reciprocal turnover of territories with *X. elegans* also documented. Territorial defence requires significant effort, this due in part to defence against dominant *X. elegans*; habitat preferences similar to those of latter, but occurs in lower numbers, with fewer territories per unit area, and often occupies territories that may be smaller than optimal; moreover, a much larger percentage of population appears to consist of non-breeding “floaters”.

**Breeding.** Virtually unknown; nothing published on nest, eggs or even of timing of breeding. Juvenile in early Dec in Peruvian Andes. In one study, courtship behaviour was evident only in pairs maintaining territories that included a minimum of two mixed-species flocks.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout range; at least in Peru, appears to be more common in lower montane forest above c. 1000 m than in adjacent lowlands. Estimated densities in mature floodplain-forest in SE Peru 5 pairs/100 ha, with home range 11-27 ha; in less productive, mid-successional vegetation at same site only 0.5-1.5 pairs/100 ha. As with most flocking species, believed to be highly sensitive to loss and fragmentation of forest. An indicator of upper tropical montane evergreen forest of C Andes.

**Bibliography** Alverson *et al.* (2001), Berlepsch & Leverkühn (1890), Brace *et al.* (1997), Chapman (1924, 1926), Cory & Hellmayr (1925), Dunning (1993), Elliot (1890a), Foster *et al.* (1994), Graves & Gotelli (1993), Hellmayr (1903b), Hilty & Brown (1986), Karr, Robinson *et al.* (1990), LeCroy & Sloss (2000), Meyer de Schauensee (1950a, 1964), Munn (1985), Parker *et al.* (1982), Perry *et al.* (1997), Pitman *et al.* (2002), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Salaman *et al.* (1999), Selater (1871), Servat (1996), Stotz *et al.* (1996), Iacozanowski (1884), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Zimmer (1930, 1934d).

27. Ocellated Woodcreeper

*Xiphorhynchus ocellatus*

**French:** Grimpar ocellé **German:** Augenflecken-Baumsteiger **Spanish:** Trepatroncos Ocellado

**Taxonomy.** *Dendrocolaptes ocellatus* Spix, 1824. Piaui; error = mouth of Rio Madeira, Amazonas, Brazil.

Molecular data support placement as sister to *X. pardalotus*, to the exclusion of *X. chunchotambo*. Considered conspecific with *X. chunchotambo* by most recent authors, but morphological and genetic differences support original treatment as a separate species; race *napensis* treated here within *X. chunchotambo*, despite suggestion by some authors that it may be closer to *X. ocellatus*. Race *weddellii* considered synonymous with nominate by most authors, but genetic and vocal data support treatment as a separate taxon; nomenclature complicated, however, by fact that type specimens of the two were found to be identical when compared directly and, in addition, precise locality data are lacking for both. Range of *lineatocapilla* uncertain; taxon known only from unique type, said to be from Ciudad Bolívar, in C Venezuela, but that evidently erroneous. A thorough taxonomic review is badly needed for this poorly known species. Four subspecies recognized.

**Subspecies and Distribution.**

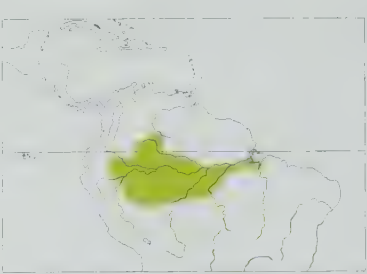
*X. o. lineatocapilla* (Berlepsch & Leverkühn, 1890) - uncertain, but believed to be from somewhere along R Orinoco, in Venezuela.

*X. o. weddellii* (Des Murs, 1855) - NW Amazonia, N of Amazon, in E & SE Colombia (E Guainia, I Vaupés, S Amazonas), extreme S Venezuela (SW Amazonas), NE Peru and NW Brazil (E to R Negro); may occur W to lowlands of E Ecuador.

*X. o. perplexus* J. T. Zimmer, 1934 - W Amazonia, S of Amazon, in NE Peru (E from lower R Ucayali, possibly from R Huallaga) and W Brazil (E at least to R Tefé, probably to R Purús, and S to Acre).

*X. o. ocellatus* (Spix, 1824) - patchily distributed in S Amazonian Brazil, S of Amazon, from R Purús E to both banks of lower R Tocantins.

**Descriptive notes.** 20-23 cm; 32-42 g. Slim, medium-sized woodcreeper with relatively long, slim bill sharp-tipped and nearly straight. Nominative race has crown and nape dark brown, crown with fine buff streaks, these becoming sparse on nape, with at most a few fine streaks on upper back; back reddish-brown to olive-brown and essentially unmarked; rump and wings cinnamon-rufous, tail similar but darker; throat deep buff, feathers edged darker (especially on lower throat); underparts olive-brown, becoming more rufescent on undertail-coverts, upper breast with large, teardrop-shaped spots of buff only weakly bordered darker, these fading into a few weak streaks on lower breast, with belly largely unmarked; iris dark brown; bill blackish, lower mandible pale grey; legs and feet grey. Easily confused, with most important characters being relatively small size, dark bill, a virtually unmarked back (having at most a few narrow shaft streaks), rich buffy throat usually with scaly pattern, and finely spotted rather than streaked underparts. Differs from *X. chunchotambo*



conspicuously margined dusky; birds tentatively considered under name *weddellii* have spots on breast larger and with darker margins, upperparts warmer brown and more heavily streaked, with streaks sometimes expanding into drops distally, and shoulders more strongly and more deeply rufescent. **VOICE.** Song, usually given only intermittently (often only few songs in a bout), primarily at dawn and dusk (less frequently in day), poorly known and geographically variable: in S Amazonia E of R Madeira a rapid trill that descends slightly before rising at end, “re-e-e-e-e-e-e-e-e-eet”, much like shortened version of *X. obsoletus* song; in S Colombia a rapid trill that descends slightly, then ascends for most of duration, and accelerates at end; also whinnying trill with emphatic final squeak, “r’r’r’r’r’a’a’a’ek”. Most common call a loud, sputtering series of 4-5 notes, “tri-p, pi, pit, pit”.

**Habitat.** Chiefly evergreen forest. At most sites occurs in tall *terra firme* forest, but at some mostly near rivers or swamps (*várzea* at some sites) or in forests associated with sandy soils. Frequents primarily interior of mature forest, less often in disturbed forest, second growth (including younger growth), and forest edge. Patchy distribution possibly related to habitat preferences that are poorly known, and perhaps geographically variable. Chiefly Amazonian lowlands, mostly below 500 m.

**Food and Feeding.** Presumably insectivorous, but diet not described in detail. Single individuals or pairs regularly associate with mixed-species flocks of forest understory; also frequently encountered away from flocks, and occasionally in association with swarms of army ants (principally *Eciton burchelli*). Forages while hitching up trunks and branches, primarily in lower and middle levels of forest; appears to obtain prey largely by gleaning from surface of trunks or limbs, or by peering and probing into bark crevices, epiphytes or clusters of leaves. Over ants, forages in understory within 8 m of ground while quietly hitching up slim trunks 3-25 cm in diameter; attempts at prey capture involved sallies to both the ground and a vine, and gleaning from both a trunk and a nearby leaf. Foraging behaviour typical of others in genus, though possibly more sluggish than *X. pardalotus*, *X. spixii* and *X. elegans*. Rather aggressive at ant swarms; seen to supplant *Dendrocincla merula*, but supplanted by White-breasted Antbird (*Rhegmatorhina hoffmannsi*).

**Breeding.** Specimens in breeding condition in mid-May in E Colombia. No other information published on nest, eggs or any other aspect of breeding biology.

**Movements.** Presumably resident.

**Status and Conservation.** Not globally threatened. Status not well known; appears to be fairly common to common, but inconspicuous and local, throughout most of range. Believed to be highly sensitive to loss and fragmentation of forest. Encounter and capture rates significantly lower in young second growth than in mature forest at Amazonian sites in Colombia and Brazil; the Brazilian study, however, documented comparable encounter rates in primary and selectively logged forest.

**Bibliography** Aleixo (2002), Andrade & Rubio (1994), Berlepsch & Leverkühn (1890), Borges *et al.* (2001), Canaday (1997), Clements & Shany (2001), Cory & Hellmayr (1925), Elliot (1890a), Gyldestoipe (1945a), Haffer (1997), Hellmayr (1903b, 1910), Hilty (2003a), Hilty & Brown (1986), Johns (1991), LeCroy & Sloss (2000), Menegaux & Hellmayr (1906a), Meyer de Schauensee (1950a, 1964), Meyer de Schauensee & Phelps (1978), Olivares (1964b), Parker *et al.* (1982), Peres & Whittaker (1991), Phelps & Phelps (1963), Pinto (1978), Ridgely & Tudor (1994), Schulenberg & Awbrey (1997a), Slater (1871), Sick (1993), Snethlage (1914), Stotz *et al.* (1996), Willis (1983d), Zimmer (1934d).

28. Chestnut-rumped Woodcreeper

*Xiphorhynchus pardalotus*

**French:** Grimpar flambé **German:** Beigekehl-Baumsteiger **Spanish:** Trepatroncos Silbador

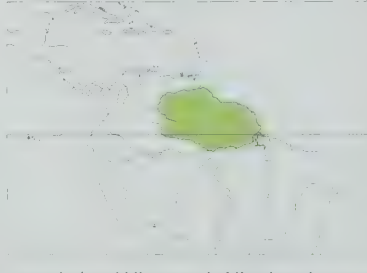
**Taxonomy.** *Dendrocopus pardalotus* Vieillot, 1818. “Cayenne”.

Molecular data support placement as sister to *X. ocellatus*, to the exclusion of *X. chunchotambo*. Affinities with *X. spixii* and *X. elegans* have also been suggested. Two subspecies recognized.

**Subspecies and Distribution.**

*X. p. caurensis* Todd, 1948 - tepui region from S & SE Venezuela (Amazonas, Bolívar) and adjacent N Brazil E to W Guyana; possibly also W to extreme E Colombia.

*X. p. pardalotus* (Vieillot, 1818) - NE Amazonia, N of Amazon, in the Guianas and N Brazil (R Negro E to Amapá); purported records S of Amazon (lower R Tapajós) probably based on mislabelled specimens.



**Descriptive notes.** 21.5-23.5 cm; male 32-49 g, female 27-46 g. Medium-sized woodcreeper with slim, relatively long bill only slightly decurved. Nominative race has face and auriculars finely streaked deep buff and brown throughout, buff supercilium and eyering; crown and nape blackish-brown, crown with small, teardrop-shaped spots of deep buff that lengthen on nape; back and wing-coverts reddish-brown to olive-brown, entire back marked sparingly with elongate drop-like streaks with narrow blackish borders; rump, wings and tail rufous-chestnut, tips of outer primaries dusky; throat cinnamon-buff, feathers edged dusky,

narrowly in middle, more boldly along lower edge; olive-brown below, breast, sides and upper belly with blackish-edged cinnamon-buff streaks, these fading on belly and flanks, with lower belly and undertail-coverts more rufescent and with brownish mottling; underwing-coverts cinnamon-buff; iris dark brown; bill dark brown to black, lower mandible largely pale grey to pale brownish; legs and feet bluish-grey or grey, sometimes clear blue or blackish. Distinguished from *X. guttatus* by much smaller size, slimmer build, slimmer bill, streaking above and below narrower



and with bolder margins; from *X. ocellatus* and *X. elegans* by more richly coloured throat and streaking (cinnamon instead of buffy), breast more spotted and less streaked; *X. ocellatus* further differs by virtually unmarked back. Female is like male, but slightly smaller. Juvenile resembles adult, but bill shorter, streaks with weaker dark borders. Race *caurensis* has upperparts more rufescent, weaker streaking above and below, dark edges of streaks narrower. Voice. Song, given intermittently, most often at dusk and dawn, a series c. 2-5 seconds long of c. 15 notes, begins with 3-4 sharp "chip" notes but usually accelerates into rattle that fades at end, "chipl, chip, chip, chi-i-i-i-i-i-p" or "zut, zut, zut-zut-zut-t'l'l't'e'e e". Song and some calls similar in quality to call of *X. elegans* but lacking terminal whine. Alarm call a loud "peet, peet, peet"; other calls include squeaky, twittered "ik" that may be repeated, variable rattle of sharp "chip" notes, and a "long call" much like that of other dendrocolaptids, "che-e-e-e-e-ee-ee-pool-pool-ee-ee-e...".

**Habitat.** Primarily lowland evergreen forest, but also lower montane forest in tepui region. Occupies mostly tall *terra firme* forest, less often floodplain-forest; also wooded savanna in N of range. Principally in interior of mature forest, but regularly frequents older second growth, plantations, and forest edge. Mostly lowlands below 500 m; reaches lower subtropical zone to 1800 m on slopes of tepuis.

**Food and Feeding.** Chiefly insectivorous. Prey taken over ants often too small to identify, but larger items have included spiders, grasshoppers (Acrididae), cockroaches (Blattodea), beetles, ants, a large centipede (Chilopoda) and a large stick-insect (Phasmida); also attracted to emergences of winged ants, but few captures made. Stomach contents included beetles, crickets, hemipteran bugs, caterpillars, spiders, millipedes (Diplopoda), and a small scorpion. Core member, in pairs or, less often, individually, of mixed-species flocks of forest understorey, occasionally of those in canopy; marked preference for flocks led by *Thamnomanes* antshrikes, e.g. in Brazil present in 55% of such flocks in Roraima and 96-100% near Manaus, but in 0 and 27% of flocks lacking *Thamnomanes* at each respective site. In French Guiana prospected flocks for minimum of 521 days before settling to breed, with 2 ringed adults each switching flocks and settling 350-450 m from point of first capture; breeding birds apparently spend more time with flocks than do non-breeders. Forages while rapidly hitching up trunks and branches, primarily from understorey to subcanopy, sometimes into canopy; prey obtained mostly by gleaning from surface of trunks or limbs, or by peering and probing into bark crevices and knotholes, among vines and epiphytes, palm fronds, or clusters of live or dead leaves; sometimes pries or flakes off loose bark, or pecks on dead wood. Occasionally encountered away from flocks; a facultative ant-follower that sometimes forages in association with swarming army ants, then generally in pairs, but sometimes 3 or, rarely, 4 birds together. Over ants, most prey gleaned from trunks or nearby foliage, usually 0.5-5 m up but regularly to 10 m (occasionally 20 m or higher), while hitching up near-vertical trunks of small trees, less frequently larger ones; gleaning and pecking more frequent, but regularly sallies short distances (usually less than 1 m) to foliage, sometimes to ground, occasionally other substrates; apparently too restless to forage effectively over ants, and usually remains with them only short periods. Rather aggressive but, owing to its smaller size, supplanted or displaced at ant swarms by most other woodcreepers (e.g. *Dendrocincla merula*, *Nasica longirostris*, *Dendrocolaptes certhia* and *D. picumnus*, and *Hylexetastes perrotii*); regularly supplants or displaces only *Dendrocincla fuliginosa*; intraspecific disputes at swarms infrequent.

**Breeding.** In French Guiana, eggs in late Jul to mid-Sept, hatching at one nest on 22nd Sept and fledging at another on 26th Sept; in Manaus (Brazil), nest with single nestling in early to mid-Dec, and dependent young recorded mid-Oct to early Feb; apparently breeds during Sept-Jan dry season throughout range, but specimens in breeding condition early Oct to mid-Jun and in non-breeding condition Feb-Jun and late Oct to early Nov. Apparently requires c. 4-5 months to complete wing molt; a female was molting rectrices while incubating. May remain paired throughout year. Nest in natural cavity, often in rotting stump less than 5 m tall, entrance hole usually 2-4 m up and generally taller than wide (e.g. 9 × 3 cm and 8 × 3.5 cm), at one nest, cup 6 cm below entrance and egg placed atop bed of bark flakes. Clutch 1 egg, average 26 × 21 mm; nestling fed by both parents; fledgling stayed with parents for at least 3 months (near Manaus). In French Guiana, pairs raised average of 0-18 young per year, and estimated average annual survival 70%; success rate lower (10%) for nests observed near Manaus.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common in lowland forest throughout range. Estimated densities in primary forest in French Guiana 7-12 pairs/100 ha. As most flocking and ant-following species, generally considered highly sensitive to loss and fragmentation of forest; abundance significantly decreased at sites in S Venezuela and French Guiana 5-12 years after selective logging (despite increase less than 1 year after harvest in one study, and only modest decrease after 1-2 years in the other). These findings suggest that slight increases in capture rates following isolation of 1-ha and 10-ha fragments near Manaus (Brazil), where birds foraged alone after flocks disbanded following fragmentation, may need to be examined over longer time period. Another study at Manaus revealed that even narrow forest roads may represent a barrier to flocks accompanied by this species, but that its frequency of occurrence in these flocks did not differ between forest interior and roadsides. An indicator of tropical lowland evergreen forest in N Amazonia.

**Bibliography.** Aleixo (2002), Beebe (1925), Berlepsch (1908), Berlepsch & Hartert (1902), Bierregaard (1988, 1990), Blake (1950b), Borges & Guilherme (2000), Braun *et al.* (2000), Chubb (1921), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1925), Davis, J. (1953), Devey & Stouffer (2001), Dick *et al.* (1984), Dickerman & Phelps (1982), Elliot (1890a), Friedmann (1948), Harper (1989), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Karr, Robinson *et al.* (1990), Lovejoy *et al.* (1984), Mason (1996), Meyer de Schauensee & Phelps (1978), Novaes (1980), Oniki (1978, 1979c), Oniki & Willis (1972, 1982), Penard & Penard (1908-1910), Phelps & Phelps (1963), Pinto (1947, 1978), Reynaud (1998), Ridgely & Tudor (1994), Sick (1993), Sneathlage (1914), Stotz (1993), Stotz *et al.* (1996), Stouffer & Bierregaard (1995), Thiollay (1992, 1994), Thiollay & Jullien (1998), Tostain (2002b), Tostain *et al.* (1992), Willard *et al.* (1991), Willis (1977, 1983d), Zimmer (1934d).

## 29. Spix's Woodcreeper

### *Xiphorhynchus spixii*

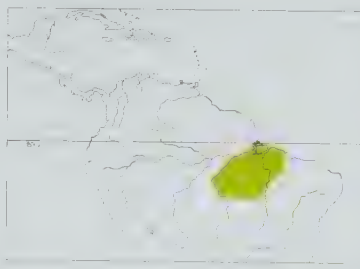
**French:** Grimpard de Spix      **German:** Spixbaumsteiger      **Spanish:** Trepatroncos de Spix

**Taxonomy.** *Picolaptes Spixii* Lesson, 1830, no locality = Pará, Brazil.

Forms a superspecies with *X. elegans*, the two regarded as conspecific by some authors but treated as separate species in most accounts; recent analyses based on genetic and morphological data support recognition of two species, a monotypic *X. spixii* and a polytypic *X. elegans*. Races *juruanus* and *insignis*, regarded by most authors as races of *X. spixii*, and by some as full species, here recognized as races of *X. elegans*. Monotypic.

**Distribution.** SE Amazonian Brazil, S of Amazon, from R Tapajós and N bank of R Teles Pires E to N Maranhão (including Marajó I); purported record from Ceará (NE Brazil) involved a misidentified subadult *X. picus*.

**Descriptive notes.** 18.5-21 cm; 27-36 g. Medium-sized woodcreeper with moderately long, slim bill only slightly decurved. Has dusky brown face finely streaked buff; pale supercilium and eyering;



and undertail-coverts largely unmarked; underwing-coverts deep ochraceous; iris dark brown; bill dark brown, paler tip; legs and feet bluish to grey. Differs from *X. elegans* in more heavily streaked back, unmarked wing-coverts, duller coloration at bend of wing, streaked rather than spotted breast and belly; plumage patterns similar to sympatric races of *X. guttatus*, but size much smaller, bill slimmer, and markings more deeply buff; distinguished from *X. obsolitus* by largely dark bill, habitat, vocalizations. Sexes similar. Juvenile resembles adult, but margins of streaks below poorly defined. Voice. Song a rapid and slightly descending trill ending in terminal whine, 30 notes in 3-3.5 seconds, "twe-tee-ti-ti-ti...-ti-ti-it, wheu", similar to song of *X. elegans* but somewhat faster. Calls also quite similar, possibly given somewhat more rapidly.

**Habitat.** Chiefly evergreen forest, mainly *terra firme* forest, but ranging into *várzea* forest at some sites. Primarily interior of mature forest, less often second growth, only occasionally visiting forest edge. Roosts alone in cavities like those used for nesting; one roost 2 m up, near top of rotten palm stump covered with mosses and epiphytes. Amazonian lowlands below 500 m.

**Food and Feeding.** Largely insectivorous; various orthopterans, including a large grasshopper (Acrididae), observed being taken over ant swarms. Stomach contents included beetles, spiders, ants, pentatomid and other hemipteran bugs, flies and fly larvae, and caterpillars. Most prey quite small, but one stomach contained caterpillars up to 50 mm in length. Single birds (less frequently pairs) are regular associates of mixed-species understorey flocks, but sometimes encountered alone or in association with army ants (principally *Eciton burchelli*). Forages while rapidly hitching up trunks and branches, primarily in lower and middle levels of forest; prey apparently obtained largely by pecking at surface of trunks or limbs, or by briefly peering and probing into bark crevices, rotten limbs, epiphyte roots, vine tangles, palm fronds, or clusters of living or dead leaves; less frequently pries up loose bark strips to expose hidden prey. Foraging manoeuvres similar to those of *X. guttatus*, but moves rapidly, instead of deliberately searching for prey. Seems to be an indirect follower of army ants, attracted more to accompanying birds than to the ants and the prey they flush; usually singly, sometimes 2 (very rarely 3), at swarms, where seen to forage within 5 m of ground (occasionally to 10-15 m), by hitching up slim, vertical trunks 5-25 cm in diameter. Attempts to capture prey over ants involve sallies to foliage, less frequently to the ground or air, but more often pecking from trunks, foliage or vines; also observed to dig into rotten trunks. Suggested as foraging too actively for efficient exploitation of slow-moving ants, which it usually follows for only short periods. Rather aggressive towards conspecific and other woodcreepers; seen to supplant *Dendrocincla fuliginosa* and even attack larger *Dendrocolaptes certhia*, but usually supplanted by latter species and by *X. guttatus*, *Dendrocincla merula* and *D. fuliginosa*; also seen supplanted by both Olive-backed Foliage-gleaner (*Automolus infuscatus*) and Black-spotted Bare-eye (*Phlegopsis nigromaculata*).

**Breeding.** Poorly known. Specimens in breeding condition in late Nov to late Feb (Marajó I), and nests with eggs in mid-Dec to early Mar; moulting remiges in late May and completing moult in early Jul near Belém. Nest in cavity, one in dead branch of *Inga* tree, another 1 m above ground in dead stump, both lined with bark chips and wood dust. Clutch 2 white eggs.

**Movements.** Presumably resident; some individually marked birds remained within relatively small area for up to 2-5 years.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common in lowland forest throughout limited range. Believed to be highly sensitive to loss and fragmentation of forest. An indicator of tropical lowland evergreen forest in S Amazonia.

**Bibliography.** Aleixo (2002), Elliot (1890b), Gyldestolpe (1951), Halfer (1997), Hellmayr (1905), Meyer de Schauensee (1966), Novaes (1969), Oniki (1970, 1971b, 1972a, 1974), Oren & Henriques (1994), Pinto (1953, 1978), Ridgely & Tudor (1994), Ridgway (1888b), Schubart *et al.* (1965), Sick (1993), da Silva *et al.* (1990), Sneathlage (1914, 1935), Stotz *et al.* (1996), Teixeira, Otch *et al.* (1993), Willis (1983d).

## 30. Elegant Woodcreeper

### *Xiphorhynchus elegans*

**French:** Grimpard élégant      **German:** Schmuckbaumsteiger      **Spanish:** Trepatroncos Elegante  
**Other common names:** Hellmayr's Woodcreeper (*insignis*); Ihering's Woodcreeper (*juruanus*); Ornate Woodcreeper (*ornatus*, *buenavistae*)

**Taxonomy.** *Dendroornis elegans* Pelzel, 1868, Engenho do Gama, Mato Grosso, Brazil.

Forms a superspecies with *X. spixii*; regarded as conspecific by some authors, but recent genetic and morphological data support recognition as a full species. Races *insignis* and *juruanus* regarded by most authors as races of *X. spixii* or by some as a full species; however, genetic evidence supports treatment of *juruanus* at least as a subspecies of *X. elegans*. Race *buenavistae* poorly differentiated from *ornatus*, and *juruanus* poorly differentiated from *insignis*, but remaining taxa inhabit large regions of Amazonia, show little or no clinal variation and intergrade along narrow zones of contact. Plumage variation further shows a "leap-frog" pattern, with similarly appearing *ornatus* and nominate separated geographically by phenotypically different *juruanus*. Five subspecies recognized.

**Subspecies and Distribution.**

*X. e. buenavistae* J. T. Zimmer, 1948 - E slope of E Andes in SC Colombia (upper R Orinoco drainage in W Meta and Caquetá); unverified (but widely cited) report from upper Magdalena Valley (Huila).

*X. e. ornatus* J. T. Zimmer, 1934 - NW Amazonia, N of Amazon, in SE Colombia (E Vaupés, S Amazonas), E Ecuador and NE Peru (N of R Marañón), and immediately adjacent NW Brazil (E to R Iça, possibly farther; specimens allegedly from São Paulo de Olivença, S of Amazon, probably originate from adjacent N bank or a nearby river island).

*X. e. insignis* (Hellmayr, 1905) - Andean foothills of EC Peru (S of R Marañón, W of R Ucayali); intergrades with *juruanus* in valley of R Ucayali.

*X. e. juruanus* (H. von Ihering, 1905) - SW Amazonia, S of Amazon, in E & SE Peru (E of R Ucayali), W Brazil (E to R Purús and upper R Madeira, S to Acre) and NW Bolivia (Pando, Beni, La Paz); populations between R Purús and R Madeira intermediate with nominate.



*X. elegans* (Pelzeln, 1868) - S Amazonia, S of Amazon, in Brazil (R Madeira E to R Tapajós and S bank of R Teles Pires, S to SW Mato Grosso) and adjacent E Bolivia (extreme NE Santa Cruz).

**Descriptive notes.** 18-22.5 cm; male 31-38 g, female 29-35 g (nominate). Medium-sized woodcreeper with relatively long, slim, nearly straight bill. Nominata race has blackish-brown face boldly streaked buff, weak supercilium, whitish lores; crown and nape dark olive-brown with small blackish-edged buff spots, these becoming more elongate on nape; back and scapulars somewhat paler brown, marked throughout with large teardrop-shaped buff spots having conspicuous blackish margins; rump, wings and tail cinnamon-rufous to rufous-chestnut, lesser and median coverts, less frequently also greater coverts, with buff shaft

stripes or subterminal spots, primary tips blackish, bend of wing cinnamon-rufous; throat buff whitish, lower edge with dusky feather margins producing scaly appearance; underparts greyish olive-brown, becoming somewhat more ochraceous on lower belly, breast and sides with relatively large, teardrop-shaped spots or chevrons that are buff with blackish edges, these fading by lower breast, leaving belly, flanks and undertail-coverts weakly streaked to largely unmarked; iris light chestnut to dark brown; upper mandible dark brown to black, lower mandible grey to dirty bluish-grey with brownish tip; legs and feet dark grey, greenish-grey or bluish olive-grey. Much smaller and weaker-billed than any race of *X. guttatus*. Race *juruanus* similar to sympatric races of *X. chunchotambo* but spots on breast smaller, throat somewhat paler, vocalizations different and, in SE Peru and N Bolivia, bill longer, darker; other races differ from *X. ocellatus* in having back more extensively and more conspicuously marked. Differs from *X. spixii* in having rounded spots rather than streaks on back, spotted wing-coverts, more rufescent bend of wing, and underparts with rounded spots (rather than elongate streaks) that are largely restricted to breast. Female is slightly smaller than male. Juvenile resembles adult but darker, with fine shaft streaks on scapulars and wing-coverts. Race *ornatus* is closest to nominate, but spots both above and below larger, coloration at bend of wing duller, general coloration warmer, and rump, wings and tail deeper rufous; *huenavistae* is also most similar to nominate but bill much paler, shoulder less rufous, streaking on scapulars and coverts less conspicuous; it is apparently greyer than *ornatus*, with spotting above and below smaller and less ochraceous. Races *insignis* and *juruanus* both differ from nominate in having unmarked wing-coverts, markings above narrower, more elongate, largely restricted to upper back; *insignis* has spots above deeper and more ochraceous in colour, bill more strongly decurved and grey, becoming blackish at base and whitish distally; race *juruanus* is most like *insignis*, but bill similar to nominate in shape and colour, spots below significantly smaller and largely confined to upper breast, size slightly larger than others. **VOICE.** Song, given primarily at dawn and dusk, 4-5-5 seconds long, a descending series of c. 30 ringing whistles that begins softly and slows at end, "whit, whit, wit, wit, wit, wit, wee, wee, wit, wit, wit, wit, wit, wew"; also distinctive series 3-4 seconds long of 10-20 sharp whistles that begins with 1-2 forceful notes, then descends and slows, before ending in terminal whine, "chip, chip, cher-cher-che-che-che-che-che-che-che, weeur", and extended series of "eek" notes that slide up and down in frequency and vary in quality from musical to harsh; song appears not to vary much geographically. Most common call an explosive series of 2 (sometimes more) sharp "chip" notes followed by whine, "chip, chip, eerh"; calls very like those of *X. spixii*, but possibly given more slowly.

**Habitat.** Chiefly humid evergreen forest, principally *terra firme* and on floodplains, occasionally also seasonally flooded forests (both *várzea* and *igapó*) and even forested river islands; along S fringe of Amazonia continues a short way into Cerrado region, frequenting gallery forest and woodlands on sandy soils; may extend into montane evergreen forest at upper end of elevational range. Prefers interior of mature forest, but occasionally occurs in second growth, in thickets of *Guadua* bamboo, or at forest edge. Mostly in Amazonian lowlands below 600 m, but ranges up E Andean slopes into subtropical zone locally to 1500 m.

**Food and Feeding.** Diet chiefly arthropods, but small vertebrates occasionally taken. Stomach contents primarily beetles and orthopterans of various types, each representing 25-30% of total, with lesser quantities of spiders, ants, larvae, bugs, and a few small vertebrates; in relation to prey availability, seems to prefer orthopterans and larvae, while avoiding cockroaches (Blattodea). Over ants, also seen to take a large scorpion, which was pounded and chewed before being swallowed. Most prey relatively small, generally less than 1 cm, often much smaller, but largest items 4 cm in length. Single birds, less frequently pairs, are core members of mixed-species flocks of forest understorey. In study in SE Peru individually marked birds spent most of time with flocks (average 83%), but also switched among two adjacent flocks within the territory (about twice as much time spent in primary flock as in secondary flock); seems to show marked preference for flocks with *Thamnomanes* antshrikes over those without, and in SE Peru seems to prefer flocks led by Dusky-throated Antshrike (*T. ardesiacus*) to those led by Bluish-slate Antshrike (*T. schistogynus*), possibly because these flocks forage in lower strata. Found with flocks that move through forest at c. 20 m in 10 minutes, significantly more slowly than those frequented by *X. chunchotambo*; however, this appears to reflect preference to join flocks moving at that rate, rather than the species itself setting rate of movement. Forages primarily while rapidly hitching up trunks and branches from understorey to subcanopy, most often at 2-10 m, less frequently to 15-20 m above ground. Most prey gleaned or pecked from surface of trunks or limbs (40-75% in various studies); items also taken by probing into epiphytic mosses and lichens (20%), vine stems (15%), dead leaves (10-15%), and occasionally from live foliage (10%) or other substrates; sometimes pries off strips of loose bark. Encountered relatively infrequently at army-ant swarms, then usually in pairs (sometimes alone), foraging primarily within 4 m of ground (most often below 1 m), occasionally to 15 m; even when with ants, most prey pecked from trunks, with some items gleaned from nearby leaves or taken in sallies to the ground or trunks, occasionally during mid-air sallies after falling prey. Suggested as being too active to forage efficiently in association with army ants, and usually does not follow them for long periods; probably an "indirect" ant-follower, attracted more by other birds than by the ants and the prey they flush. Relatively aggressive, begins fights not only with subordinate species but also at times with larger ones; seen to be supplanted by *Dendrocolaptes hoffmanni* and *D. certhia*, and by *X. guttatus*, but supplants other small *Xiphorhynchus* and *Dendrocincla fuliginosa*; aggressive interactions with conspecifics not uncommon. High degree of overlap in diet and substrate use with both *X. chunchotambo* and *X. obsoletus* results in intolerance (i.e. aggression at almost every encounter when among flocks), also in interspecific territoriality producing checkerboard pattern of distribution among flocks in SE Peru; reciprocal turnover of territories with *X. chunchotambo* documented. Pair defends territories of two mixed-species flocks, and largely disregards intruders away from immediate area of these flocks. Territories did not appear to expand or change in location once established; with all new territories established by individuals previously unknown at site. Birds were never displaced from primary flock, and only rarely displaced from secondary flock, during interactions with *X. chunchotambo*.

**Breeding.** Specimens in breeding condition in mid-Aug to mid-Oct in Brazil (N Mato Grosso); adult incubating in late Sept, eggs hatching in early Oct and a chick fledging in late Oct at a nest in SE Peru. Nest in tree cavity; only one nest described in detail, c. 65 cm above ground in dead stump 1.5 m tall, with covered top, elongate side entrance 18 x 3 cm, no nest material visible at bottom of cavity. Clutch 2 white eggs; incubation period at least 16 days; hatchling with short yellow bill, fluffy grey down, eyes open and feather sheaths appear on back and wings at c. 1 week, feathers on head 4 days later; nestling period 18-19 days, but one chick disappeared from nest at c. 10 days of age. In SE Peru, one individual was at least 8 years old at end of study, occupied same territory for 7 of those years; three others at site were at least 6 years old.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Fairly common to common in lowland forest throughout core of range in Brazil, Peru, and even N Bolivia; rare to uncommon and quite local in lowlands of E Ecuador and possibly SE Colombia. Estimated density in mature floodplain-forest in SE Peru 4-6 pairs/100 ha of occupied habitat, where home ranges 4-5-10 ha (average 7 ha), significantly smaller than those of *X. chunchotambo* at same time. Dependent on forest, and thus believed to be highly sensitive to loss and fragmentation of this habitat. An indicator of tropical lowland evergreen forest in S Amazonia, and more specifically of *terra firme* forest and floodplain-forest in SE Peru.

**Bibliography.** Aleixo (2002), Alverson, Moskovits & Shopland (2000), Alverson, Rodriguez, & Moskovits (2001), Bates & Parker (1998), Bates *et al.* (1989), Chapman & Rosenberg (1991), Clements & Shany (2001), Cory & Hellmayr (1925), Dubs (1992), Foster *et al.* (1994), Graves & Gotelli (1993), Gyldestolpe (1945a, 1951), Haffer (1997), Hellmayr (1910), Hilty & Brown (1986), Ihering (1904), Karr, Robinson *et al.* (1990), Lloyd & Marin (2000), Meyer de Schauensee (1950a, 1964), Munn (1985), Munn & Terborgh (1979), Naumburg (1930), Novaes (1976), Novaes & Lima (1990), O'Neill & Pearson (1974), Parker & Bailey (1991), Parker *et al.* (1982), Pelzeln (1868-1871), Pinto (1947, 1978), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robbins *et al.* (1991), Robinson & Terborgh (1997), Selater *et al.* (1873), Servat (1996), Sick (1993), da Silva (1996), Sneath (1914), Stotz (1993), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Taczanowski (1884), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Willis (1983d), Willson-Hillman (2002b), Zimmer (1934d).

## 31. Striped Woodcreeper

### *Xiphorhynchus obsoletus*

**French:** Grimpard strié

**German:** Streifenbaumsteiger

**Spanish:** Trepatorncos Loco

**Taxonomy.** *Dendrocolaptes obsoletus* M. H. K. Lichtenstein, 1820, no locality = state of Pará, Brazil.

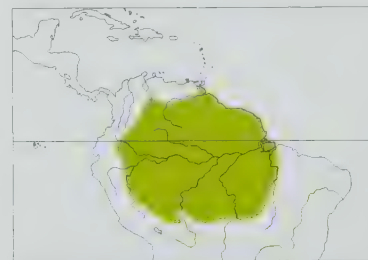
Relationships uncertain; on basis of molecular data, apparently ancestral to a morphologically variable clade that includes *X. guttatus*, *X. susurrans*, *X. flavigaster* and *X. lachrymosus*, possibly also *X. erythropygius* and *X. triangularis*. Assessment of race *notatus* complicated by marked individual variation in coloration, and intergradation over seemingly wide area with both nominate and *palliatius*; birds from R Purús drainage (possibly also R Madeira), in W Brazil, sometimes recognized as race *multiguttatus*, but intermediate between nominate and *palliatius*. Validity of poorly differentiated race *caicarae* (relative to nominate), with biogeographically unlikely range, is uncertain. Four subspecies recognized.

**Subspecies and Distribution.**

*X. o. notatus* (Eyton, 1852) - drainages of R Apure, upper R Orinoco, lower R Caura and upper R Negro in E Colombia, W & S Venezuela and adjacent NW Brazil; birds from lower R Negro intermediate with nominate.

*X. o. caicarae* J. T. Zimmer & Phelps, Sr., 1955 - middle Orinoco Valley in C Venezuela (NW Bolívar). *X. o. palliatius* (Des Murs, 1855) - W Amazonia, both N & S of Amazon, in SE Colombia (Meta, Caquetá), E Ecuador, E Peru, W Amazonian Brazil (E to R Negro and to R Jurua) and N Bolivia (S to N La Paz and NW Beni); birds from R Purús intermediate with nominate.

*X. o. obsoletus* (M. H. K. Lichtenstein, 1820) - E Amazonia, in E Venezuela (Delta Amacuro), the Guianas and N Brazil (lower R Negro E to Amapá and, S of Amazon, from R Madeira E to R Tocantins and S to W & N Mato Grosso); populations in NE Bolivia (NE Santa Cruz) and NE Venezuela (E Monagas) likely represent this race.



**Descriptive notes.** 18-20.5 cm; male 27-37 g, female 24-36 g. Medium-sized woodcreeper with slim, slightly decurved bill and about as long as width of head. Nominata race has face finely but evenly streaked creamy buff and dark brown, becoming bold scaling on side of neck, pale supercilium indistinct or lacking; crown and nape blackish to dark olive-brown, extensively marked with teardrop-shaped whitish-buff spots with dusky margins, back olive-brown (sometimes slight rufous tone), almost throughout with elongate dusky-margined whitish-buff streaks, rump, wings and tail cinnamon-rufous to rufous-chestnut, lesser coverts olive with fine

shaft streaks, primary tips dusky to dark brown; throat buff white, often with weak scaling; underparts greyish olive-brown (sometimes more rufescent) with black-edged streaks of buffy-white extending boldly across breast and upper belly, before narrowing and weakening on lower belly and undertail-coverts; underwing-coverts cinnamon; iris brown to dark brown; upper mandible pale brownish to greyish-brown, base and culmen darker, cutting edges ivory-coloured, lower mandible pale bluish-grey to light brown; legs and feet slate-grey, blue-grey, greenish-grey or dark brown. Similar to *X. picus* but bill duskier and slightly decurved, overall coloration more olive, back and underparts more extensively streaked, latter also with streaks more linear and usually with blackish edges; *X. pargalotus* has bill black, throat and streaks more cinnamon in colour, and is largely restricted to *terra firme* forest. Female is slightly smaller than male. Juvenile resembles adult, but margins of streaks and spots on nape, back and underparts more poorly defined. Races differ mainly in general coloration, but with substantial individual variation both above and below: *notatus* is more rufescent than nominate, with throat and streaks (both above and below) deeper buff to ochraceous; also more finely and more narrowly streaked than *palliatius*; *palliatius* even more rufescent overall, with markings more deeply coloured, less contrast between back and rump, and bill heavier; *caicarae* is on average smaller than nominate, with underparts browner, less greyish, bill shorter. **VOICE.** Song, among first heard in flooded forests at dawn and last heard at dusk (also intermittently during day), a trill 1.5-3 seconds long, 20-35 sharp notes, first stuttering, then speeding up slightly, rises conspicuously at end, "che-e-e-e-e-e-e-e-e-e-e-ick!"; at some sites in E Colombia, song said to be instead a sharp "peep" followed by trill; similar but slightly descending trill sometimes given when agitated. Calls include "sip" note like that of hummingbird (Trochilidae), also "ti-dik" and dry twittering "tit-it-it" or "si-si-sip".



**Food and Feeding.** Diet chiefly arthropods, occasionally small vertebrates. Stomach contents included various beetles, ants, grasshoppers (Acrididae), spiders, scorpions, bugs, cicadas, cockroaches (Blattodea), caterpillars, centipedes (Chilopoda), millipedes (Diplopoda), a small crab, and either small frogs or lizards. Most prey relatively small (less than 15 mm), especially for the bird's size, but items over 20 mm in length and sometimes to 60 mm regularly taken. In relation to prey available in clusters of dead leaves, selects for various orthopterans but avoids cockroaches and, to lesser degree, spiders. Overlap in diet high with smaller *X. elegans* and *Dendrocincla fuliginosa*, less so with *D. merula*. Forages singly, occasionally in pairs; rarely 3 together at ant



swarms. Regular associate of mixed-species flocks frequenting mid-levels and subcanopy, sometimes those in understorey or even canopy. Radio-tracked birds at site in SE Peru spent 16% of time with flocks, accompanying them in transitory fashion; present in 26% of flocks observed in E Amazonia, 18–21% in S Amazonia, 39% in SW Amazonia, and 16–65% in E Brazil. One study documented marked preference for flocks led by *Thamnomanes antshrikes* in E Brazil but not in S Amazonia; strong association with Spot-winged Antshrike (*Pygiptila stellaris*) found in another study. Regularly follows ant swarms (*Eciton burchelli*, sometimes *Labidus praedator*) but, unlike “professional” ant-followers, does not investigate bivouacs. Forages while hitching up trunks and branches, primarily from mid-levels to subcanopy, sometimes higher and often lower, especially when over ants; mean foraging height in one study 11 m, with range 1–21 m. Most prey taken either from surface of trunks or limbs by gleaning or pecking (10–45% depending on study), or from clusters of suspended dead leaves or palm fronds by probing (35–63%); occasionally searches epiphytes, vine stems, live foliage or other substrates; sometimes pries off bark flakes, manipulates or thrashes substrate with bill, or pecks on dead wood or termite (Isoptera) nests to expose prey from interior. Routinely searches larger leaves than do other dead-leaf specialists, and regularly hangs from palm fronds or clings to large *Cecropia* leaves. When over ants, uses medium-sized trunks (mostly 5–20 cm diameter), typically vertical ones, but sometimes uses angled or even horizontal perches; at some sites forages mostly 2–10 m up (occasionally higher or lower), above zone of high competition near ground, but at others forages extensively within 1 m of ground; pre-capture techniques when associated with ants mostly similar to those used away from them, but also makes regular sallies to take items on ground or nearby foliage, sometimes in mid-air. Quite aggressive, beginning fights not only with smaller species but also with larger ones; aggressive interactions with conspecifics not uncommon. Constantly supplanted only by much larger *Hylexetastes perrotti*; occasionally seen to initiate fights with, and sometimes supplant, larger *Dendrocolaptes* (*D. picumsum*, *D. hoffmannsi*, *D. platyrostris*, *D. certhia*) and *X. promeropirhynchus*, but clearly dominant over smaller *Dendrocincla fuliginosa*, less so over *D. merula*, congeners and *Lepidocolaptes albolineatus*. Also aggressive towards non-woodcreepers, sometimes displacing various antbirds (Thamnomphiliidae), picids such as Yellow-tufted Woodpecker (*Melanerpes cruentatus*) and Chestnut Woodpecker (*Celeus elegans*), Grey-headed Tanager (*Eucometis penicillata*) and, especially, foliage-gleaners of genera *Philydor* and *Hylocistis* (Furnariidae). Overlap in diet (high) and substrate use (moderate) with *X. promeropirhynchus*, *X. chunchotambo*, *X. picus* and *L. albolineatus*, resulting in partial tolerance (i.e. fights when encountered among flocks on occasion, but often foraging in close proximity).

**Breeding.** Breeds during main dry season in French Guiana, in Mar in Guyana, and eggs in Jul in Surinam; birds in breeding condition in Jan–May in S Venezuela, N Brazil and the Guianas, in Feb in S Amazonia and in early Oct in N Bolivia; adults with dependent young in mid-May in E Amazonia and mid-Sept to early Dec in French Guiana, and juveniles in mid-Oct to early Feb in S & SW Amazonia and mid-May in E Amazonia. Nest usually low in natural cavity in dead tree or in old woodpecker (Picidae) hole; one nest was 7–8 m above ground. Clutch 1–3 white eggs, usually 2, apparently 27–22 mm (some published measurements believed too small for this species, more likely pertain to *X. picus*). Adults sometimes seen with a dependent juvenile at ant swarms.

**Movements.** Apparently resident throughout range.

**Status and Conservation.** Not globally threatened. Fairly common to common in lowland forests in most of range. At site in SE Peru, densities highest in mid-successional vegetation (27.5 pairs/100 ha), slightly lower in late-successional growth (22.5 pairs/100 ha), and lower still in mature floodplain-forest (9–21 pairs/100 ha of occupied habitat); home ranges in mature floodplain-forest at site averaged 6 ha. More abundant than smaller members of genus in SE Peru, apparently reflecting use of richer foraging substrates and possibly its ability to repel smaller species from these substrates. Largely dependent on intact but not necessarily undisturbed forest, with most populations inhabiting a region with much forest remaining and probably only moderately sensitive to disturbance; nominate race, however, largely restricted to scattered fragments of lowland Atlantic Forest, and likely to be moderately to highly sensitive to continued loss of forest.

**Bibliography.** Aleixo (2002), Bates & Parker (1998), Bates *et al.* (1989), Berlepsch & Hartert (1902), Brooke (1983), Canaday (1997), Chapman & Rosenberg (1991), Chubb (1921), Cintra & Yamashita (1990), Cory & Hellmayr (1925), Davis (1993), Dick *et al.* (1984), Dubs (1992), Elliot (1890a), Foster *et al.* (1994), Friedmann (1948), Griscom & Greenway (1941), Gyldestolpe (1945a, 1945b, 1951), Haverschmidt & Mees (1994), Hellebrekers (1942), Hellmayr (1907b, 1907c, 1910, 1920), Hilty (2003a), Hilty & Brown (1986), Karr, Robinson *et al.* (1990), Meneaux & Hellmayr (1906a), Meyer de Schauensee (1950a, 1964), Meyer de Schauensee & Phelps (1978), Munn (1985), Munn & Terborgh (1979), Naumburg (1930), Niethammer (1956), Novas (1974, 1976), Oniki (1971b, 1972a), Oniki & Willis (1972, 1983a), Oren & Parker (1997), Parker & Bailey (1991), Penard & Penard (1908–1910), Peres & Whittaker (1991), Phelps & Phelps (1963), Pinto (1947, 1978), Pinto & Camargo (1957, 1961), Pitman *et al.* (2002), Remsen & Parker (1984), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Rocha & Peñaranda (1992), Rosenberg (1997), Salvin & Godman (1883), Schubert *et al.* (1965), Scott & Brooke (1985), Servat (1996), Sick (1993), da Silva & Oniki (1988), da Silva *et al.* (1997), Sneath (1914), Snyder (1966), Stotz (1993), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Taczanowski (1884), Terborgh, Fitzpatrick & Munn (1984), Terborgh, Robinson *et al.* (1990), Tostain (1980b, 2002b), Tostain *et al.* (1992), Willard *et al.* (1991), Willis (1983d, 1983e, 1986), Zimmer (1934d).

### 33. Cocoa Woodcreeper

#### *Xiphorhynchus susurrans*

**French:** Grimpai cacao

**German:** Kleiner Fahlkehl-Baumsteiger

**Spanish:** Trepatroncos Cacao

**Other common names:** Lawrence’s Woodcreeper (“*namus* group”)

**Taxonomy.** *Dendrocolaptes susurrans* Jardine, 1847, Tobago.

Sister to *X. guttatus* and treated by most authors as conspecific, but recently elevated to full species on grounds of differences in calls and body size; geographical patterns in songs, however, more complex than previously realized, and size differences do not correspond to species limits as presently recognized. No published data support recognition by most recent authors of “*namus* group” with *X. susurrans* instead of *X. guttatus*. Two subspecies groups, differing markedly in plumage patterns: “*susurrans* group” (with *jardinei* and *margaritae*) in E of range (Trinidad, Tobago, Margarita I. and adjacent Venezuelan mainland), and “*namus* group” (including all remaining races) in Central America, N Colombia and N & W Venezuela. Preliminary molecular analyses suggest close affinity of “*namus* group” to nominate *X. guttatus* and allied race *polystictus*, but populations in “*susurrans* group” were not included in the analyses. Birds from NE Colombia and adjacent NW Venezuela, described as race *demonstratus*, considered inseparable from *namus*. Eight subspecies recognized.

#### **Subspecies and Distribution**

*X. s. confinis* (Bangs, 1903) - Caribbean slope of E Guatemala and N Honduras.

*X. s. costaricensis* (Ridgway, 1888) - Central America, on both slopes, from St. Honduras to W Panama (W Chiriquí, W Bocas del Toro).

*X. s. marginatus* Griscom, 1927 - Pacific slope of C Panama (E Chiriquí, Veraguas and W Azuero Peninsula).

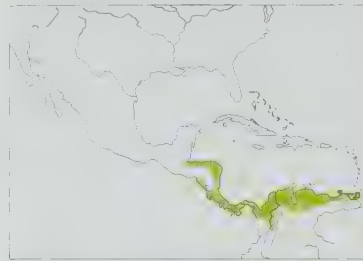
*X. s. namus* (Lawrence, 1863) - both Caribbean and Pacific slopes of E Panama (W to Canal Zone and E slope of Azuero Peninsula), N Colombia (E to W Guajira, Atrato Valley, lower Cauca Valley, upper Magdalena Valley S to Tolima, and E of Andes in NW Arauca) and W & N Venezuela (Zulia, Táchira and W Apure E to E Miranda).

*X. s. rosenbergi* Bangs, 1910 - upper Cauca Valley in Valle (W Colombia).

*X. s. jardinei* (Dalmás, 1900) - NE Venezuela (NE Anzoátegui, N Monagas, Sucre).

*X. s. margaritae* Phelps, Sr. & Phelps, Jr., 1949 - Margarita I. off N Venezuela.

*X. s. susurrans* (Jardine, 1847) - Trinidad and Tobago; also one record from adjacent NE Venezuela (SE Sucre).



**Descriptive notes.** 22.5–25.5 cm, male 43–57.5 g, female 41.5–48 g (“*susurrans* group”); 18.5–24.5 cm, 35–58 g (“*namus* group”). Medium-sized woodcreeper with long, relatively heavy bill slightly decurved and prominently hooked at tip. Nominative race has dusky lores and auriculars, the latter with buffy streaks, dusky-bordered whitish supercilium; crown and nape dark brown to blackish, feathers with elongate buff spot, becoming streaks on neck and nape; upper back and wing-coverts olive-brown to brown, with blackish-edged buff elongate spots on upper back, narrowing to streaks on middle of back and disappearing altogether on

lower back; lower back, rump, remiges and tail rufous-chestnut, primaries with dusky tips; throat whitish to pale buff with narrow blackish scaling; underparts greyish-olive to buffy brown, upper breast with dusky-edged spots of buffy-white, becoming elongate on lower breast and fading by belly and undertail-coverts, which are weakly barred to largely unmarked; underwing-coverts cinnamon; iris dark brown; bill black, base of lower mandible pale greyish to horn; legs and feet dark blue-grey, greenish-grey or slaty. Most likely confused with *Lepidocolaptes souleyetii*, which is more likely to be found in open habitats, and is much smaller with bill slimmer, more decurved and extensively pale. Members of “*susurrans* group” distinguished from both “*namus* group” and *X. guttatus* by whiter throat and spotted instead of streaked pattern on breast. Members of “*namus* group” distinguished from geographically nearest populations of *X. guttatus* (race *polystictus*) by smaller size, throat mostly unmarked and more richly buff, plumage more olive. Female resembles male, but smaller. Juvenile of “*namus* group” is darker than adult, throat faintly scaled dusky, crown less spotted, streaks below broader and often tending towards bars, bill shorter and blacker. Race *jardinei* similar to nominate, but throat and underparts deeper buff, back more rufescent; *margaritae* slightly smaller than both *susurrans* and *jardinei*, lacks scaly pattern on throat, has fewer and larger spots on throat and breast; members of “*namus* group” are less similar to “*susurrans* group” of present species than to *X. guttatus* because underparts broadly streaked rather than spotted; *costaricensis* is similar to *namus*, but back and rump darker and more deeply reddish, darker and more olive below, streaking both above and below somewhat reduced; *confinis* similar to *costaricensis* and *namus*, but throat paler and more whitish (less buffy), breast streaks weaker but extending farther down belly; *marginatus* also like *costaricensis* but has wings and tail darker chestnut, sooty tips of primaries darker and more extensive, throat brighter buff, edges of crown and nape feathers more blackish; *rosenbergi* is most like *namus* but has streaks on breast wider and much more boldly edged black. **VOICE.** Remarkably vocal for a woodcreeper often singing incessantly in early morning and late afternoon (sometimes for much of day when breeding) from concealed perch high in canopy. Song, a loud series of 7–20 clear but upward-inflected whistles (each described as “doy”, “wick” or “weet”), given at 3 notes per second, either on same pitch or beginning fast and rising slightly, before fading and descending, e.g. “ki, ki, kuee, kuee, whe, whe, whe, whe, whe, whe”. Long call, given intermittently throughout day by both sexes, a loud descending series that gradually loses intensity, e.g. “peer, peer, peer, peert”, “she-you, she-you, cherp chew” or “che-e-e-r, che-e-e-r, che-e-e-r”; short call, given most frequently when going to roost or when incubating (but not when feeding young), a sharp, piercing whistle described as “peepeer” or “pyewl”; similar but drier “chu” or “choe” may be given in alarm; calls generally similar to those of *X. guttatus*. Many adult calls given by fledglings, but with less volume.

**Habitat.** Chiefly humid evergreen forest of lowlands, occasionally into adjacent foothills. Principally gallery forest, deciduous woodland, older second growth, and forest edge; sometimes interior of mature forest, or outside forest in younger second growth, plantations, or clearings with scattered trees. Some coastal populations inhabit mangroves, and occupies arid scrub on Margarita I. Primarily lowlands below 900 m, but ranges in small numbers into subtropical zone in foothills; to 1350 m in NW Colombia and 2400 m in N Venezuela. Occurs syntopically with *X. flaviventer* in Caribbean lowlands of Honduras. Roosts alone in tree cavities, natural one apparently preferred over old woodpecker (Picidae) hole; one documented roost 1 m above ground, another at 4.5 m up; leaves roost at first light, returns in near darkness.

**Food and Feeding.** Diet chiefly arthropods, but occasionally takes small vertebrates. Prey observed taken or found in stomachs includes beetles, cockroaches (Blattodea), grasshoppers (Acrididae), crickets (Gryllidae), caterpillars and other insect larvae, cicadas (Cicadidae), spiders and their egg sacs, earwigs (Dermaptera), moths, scorpions, spiders, centipedes (Chilopoda), small isopods, also occasionally frogs and small lizards. Prey often of moderate size, with many items 1–1.5 times length of bill (smaller prey often not identified). Most often forages alone (occasionally 2 individuals together), but sometimes with mixed-species flocks or in association with swarms of army ants (*Eciton burchelli*, occasionally *Labidus praedator*, once *E. hamatum*). In one study in SW Costa Rica, present at 21% of ant swarms monitored; most swarms attended by single bird, sometimes 2, very rarely 3 together. Occasionally checks inactive bivouacs and approaches play-back of calls of Bicoloured Antbird (*Gymnophaps leucaspis*), both types of behaviour typical of “professional” ant-followers. Forages intently while hitching up trunks and branches, often in spiral motion, from understorey to canopy (mostly mid-levels and subcanopy when away from ants); unlike some congeners, seems to prefer uppersides of limbs to undersides. Most prey either gleaned from crevices or under bark of trunks or branches, or taken by probing into or rummaging among dead leaves, epiphytes, clumps of moss, or knot-holes; sometimes pecks with open bill at rotting wood or flakes bark to expose hidden prey, and has been observed at dawn to take moths attracted by lights left on at night. Over ants, descends trunks to undergrowth, mostly below 2 m, infrequently above 5 m, regularly dropping to ground to take flushed prey, but forages higher in presence of competing antbirds; in Panama uses slim to medium-sized trunks (mostly 5–50 cm diameter), favouring near-vertical perches, but uses uppersides of limbs more often than undersides; in Trinidad, where fewer competing antbirds, even slimmer and often angled or even horizontal perches used, and most prey taken from ground. Over ants, food captured both by gleaning and by short sallies to ground or foliage. Relatively aggressive, especially when attending army ants; usually supplanted by larger *X. lachrymosus* and *Dendrocolaptes sanctithomae* (occasionally supplants



both), but persistently supplants the smaller *Dendrocincla fuliginosa*. Similar encounters with non-woodcreepers include instances of being supplanted by aggressive thamnophilids (*Phaenostictus mcleannani* and *Gymnophaps leucaspis*), and supplanting smaller Spotted Antbird (*Hylophylax naevioides*), Grey-headed Tanager (*Eucometis penicillata*), and Swainson's and Grey-cheeked Thrushes (*Catharus ustulatus* and *C. minimus*). Also quite aggressive toward conspecifics.

**Breeding.** Breeds in Apr-Jun in N Venezuela and Mar-Aug in Trinidad and Tobago; nests with eggs in Mar-Jul in Costa Rica and Panama, early Apr to late Jun in Trinidad; elsewhere, birds in breeding condition in Jan-May in N Colombia and early Jul-early Aug in Nicaragua; juveniles in Apr in Trinidad, in late May in Panama and in early Jul in Nicaragua. Nest in existing cavity, including hollow trunk, dead stump, large bamboo stalk, gap between roots of strangler fig, cavity in building, and even within partly covered box, natural cavity seemingly preferred, 1-6.5 m up but often near ground (often below 2.5 m), entrance usually an elongate slit and can be quite large in diameter; may enlarge entrance or otherwise modify existing cavity; lined (probably by female only) with bits of bark and wood, or with weed stems, dead leaves, foliose lichens or plant down, deeper cavities sometimes filled with many fragments of bark and wood (18 cm deep in one nest), but chamber still can be as much as 1 m below entrance. Clutch 2 white eggs, average 30 × 22.5 mm in Trinidad, 28.5 × 19.5 mm in Costa Rica; limited data suggest that pair bonds are brief and that young raised by single parent, presumably female; incubation in long sessions, at various nests averaging 42-145 minutes (range 18-181 minutes), with much shorter recesses (average 21-38 minutes, range 3-48 minutes); one bird was in attendance for 80% of active period during an entire day at one observed nest, another for 70% during morning hours; incubating bird regularly returns with bark flake or flakes; incubation period 18 days; hatchling has eyes closed and dark grey down c. 2 cm long, pin-feathers erupt on dorsum at 1 week, body and wings largely feathered (head mostly naked, rectrices mostly ensheathed) at 17 days; nestlings brooded 25-30% of time when less than 4 days old, progressively less with age, until not brooded at all after 9-10 days; nestlings fed chiefly with insects, sometimes spiders or small *Anolis* lizards, always brought one at a time in

parent's bill, at an hourly rate of 0.5 meals for each 2-day old nestling, increasing to 1 meal when young 1-2 weeks old, larger young also receive larger meals; nestling period 19-20 days; young do not return to nest after fledging. Annual adult survival estimated at 76% at sites in Trinidad and 67% in Panama.

**Movements.** Apparently resident throughout range.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout most of extensive range, including Trinidad and Tobago; uncommon to rare and local at upper end of elevational range, in semi-arid NW Costa Rica, and in N portion of distribution in parts of Honduras and, especially, Guatemala. In Panama, estimated density at one site 20 pairs/100 ha, and estimated home range of marked individual at another more than 2.2 ha. A study on Barro Colorado I, also in Panama, produced estimate of 250 individuals present, with the species occupying 80% of the island. Generally a common and widespread species, with preference for forest edge and second growth at many sites suggesting relatively low sensitivity to human disturbance; does, however, require at least patchy forest nearby.

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PLATE 36

## PLATE 36

## Family DENDROCOLAPTIDAE (WOODCREEPERS) SPECIES ACCOUNTS

### 34. Ivory-billed Woodcreeper

#### *Xiphorhynchus flavigaster*

French. Grimpur à bec ivoire

German. Strichelbaumsteiger

Spanish. Trepatroncos Picomarfil

Other common names. Laughing Woodcreeper; Stripe-throated Woodcreeper ("striatigularis")

**Taxonomy.** *Xiphorhynchus flavigaster* Swainson, 1827. Temascaltepec, México, Mexico. Sister-species relationship with *X. lachrymosus* has been suggested on basis of molecular data. Assessment of geographic variation is complicated by marked individual variation in coloration, overall size, and pattern of streaking (width and shape) both above and below. Race *mentalis* poorly differentiated from nominate; *saltuarius*, *ascensor* and *ultimus* weakly differentiated from *eburneirostris*. Described form *striatigularis*, known from unique type specimen from S Tamaulipas

(Mexico), sometimes treated as a full species, but recently shown to represent an aberrant individual of present species. Eight subspecies recognized.

#### Subspecies and Distribution.

*X. f. tardus* Bangs & J. L. Peters, 1928 - NW Mexico (SE Sonora, N Sinaloa); intergrading with race *mentalis* in W Durango.

*X. f. mentalis* (Lawrence, 1867) - Coastal W Mexico (C & S Sinaloa S to Michoacán); intergrades with *tardus* in W Durango and with nominate in W Guerrero.

*X. f. flavigaster* Swainson, 1827 - SW Mexico (Guerrero, S Oaxaca).

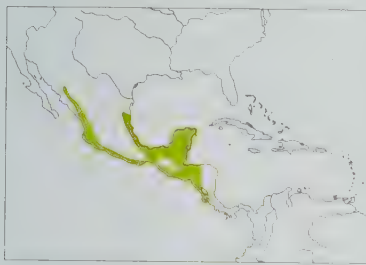
*X. f. saltuarius* Wetmore, 1942 - NE Mexico (S Tamaulipas and SE San Luis Potosí S to N Veracruz).

*X. f. ascensor* Wetmore & Parkes, 1962 - Caribbean slope of S Mexico from S Veracruz and N Oaxaca E to Tabasco, possibly also N Chiapas E to adjacent Guatemala.

*X. f. yucatanensis* Ridgway, 1909 - Yucatán Peninsula; populations at base of peninsula S to N Belize, possibly to NC Guatemala (Petén), show signs of intergradation with *eburneirostris*.



*X. f. eburneostriis* (Des Murs, 1847) - Caribbean Slope of Central America from C Guatemala and Belize E to Honduras, also locally in N Costa Rica; Pacific slope from S Mexico (extreme SE Oaxaca, S Chiapas) S to NW Costa Rica.  
*X. f. ultimus* Bangs & Griscom, 1932 - hills of Nicoya Peninsula, in NW Costa Rica; possibly intergrading with *eburneostriis* in adjacent lowlands.



**Descriptive notes.** 20-26.5 cm; male 40-62 g, female 35-56g. Relatively large woodcreeper with long, moderately heavy and slightly decurved bill. Nominative race has face finely streaked buffy and blackish, indistinct buffy supercilium and eyering contrasting with weak dark postocular stripe; crown and nape deep greyish-brown with conspicuous pale buff spot-like streaks; back and scapulars light greyish-brown to olive-brown, broadly and extensively streaked buff, each streak narrowly edged blackish; tawny-brown rump contrasts little with cinnamon-rufous to rufous-chestnut wings and tail; median and greater coverts like

back, lessers more rufescent, lesser and median coverts having fine pale shaft streaks, those on medians edged blackish; remiges lighter than tail, outer primaries paler still, less rufescent, with dusky tips; buffy throat finely streaked dusky, separated from submoustachial region by dusky malar stripe; upper breast slightly paler than throat, with blackish-edged feathers producing scaly appearance; rest of underparts light buffy brown with broad dusky-edged buff streaks that weaken towards lower belly; underwing-coverts ochraceous buff; iris light reddish-brown to dark brown; bill pale horn-white, greyish-ivory or pale flesh, base of upper mandible brownish or bluish; legs and feet yellowish-green to olive-grey or brownish. Distinguished from other woodcreepers in range mainly by combination of large size, heavy and relatively straight bill that is largely pale, boldly streaked upperparts, dark malar stripe. Female is slightly smaller than male. Juvenile resembles adult, but slightly darker, throat more boldly streaked, streaks on breast and back duller and with broader black edges, bill brownish. Race *mentalis* is very like nominate, but smaller, with conspicuously shorter bill; *tardus* is much smaller, and paler and greyer both above and below; *yucatanensis* is similar in coloration to *mentalis* but slightly smaller, throat pale buff and unmarked; *eburneostriis* is like nominate but has throat markings limited to a few fine streaks at lower edge, overall coloration darker and browner (less greyish), crown and nape sooty black, back deeper brown, streaking above and below richer buff; *ultimus* is like *eburneostriis* but larger, with bill longer and heavier, upperparts slightly darker, underparts richer buff, streaks below with blacker edges; *saltuarius* is also similar to *eburneostriis* but paler, especially on belly, with streaks above much larger and more prominent, those below less sharply defined; an aberrant individual had throat heavily streaked black, breast streaks with wavy black edges, back streaks broader, wing-covert streaks more broadly edged black and underwing-coverts mottled ("X. striatigularis"); *ascensor* is darkest of all, upperparts richer and darker brown, wings and tail deep chestnut, crown streaked rather than spotted, streaks both above and below broader and more boldly margined with black, those below extending farther down belly. Voice. Song in W Mexico c. 2.5 seconds long, 15-20 piercing whistles in loud cascade that first ascends slightly and increases in volume before descending and slowing, "t-t-t-ttttttt-tewtewtew-tew-tew"; in rest of range a "laughing" whinny 4-7 seconds long, 25-45 clear whistles reaching peak pitch, fastest tempo and greatest volume in first second, then steady for a short period, and eventually fading, slowing and falling, slower than in W Mexico and often likened to song of Canyon Wren (*Catherpes mexicanus*), but sometimes ending in upward-inflected "whee whee-weep" or "weet, weet". Calls include sharp, almost explosive "tchee-oo", "skweel" or "squirp", which in W Mexico can be softer "chehr"; also explosive, descending series of 4-12 notes, "tyew-tyew-tyew" or "s-keé, kee, kee, kee, kee, kee, kur", similar to calls of *X. susurrans*; also a dry rattle like that of woodpecker (Picidae).

**Habitat.** Occupies a variety of wooded habitats from lowlands to middle elevations of foothills. Apparently most common in deciduous woodland, but occurs also in lowland and montane evergreen forests, gallery forest, thorn-scrub, lower reaches of cloudforest, pine-oak (*Pinus-Quercus*) or pine woodland, and both mangroves and freshwater swamps. Found not only in mature forest, but also in second growth, forest edge and plantations; not nearly so dependent on true forest as are most woodcreepers. Unlike most members of family, probably more common in drier situations than in humid forest. Occurs over a wide elevational range, mainly tropical lowlands and foothills from sea-level to c. 1500 m, but at least occasionally into subtropical zone to 2800 m; possibly more common at lower elevations in N, but in foothills in S.

**Food and Feeding.** Diet mostly arthropods, but small vertebrates (principally lizards) also taken. Prey taken over army-ants included a large green orthopteran, also a significant number of lizards (20% of all prey observed taken in one study). Stomachs contained a high diversity of prey; in a study in S Mexico primarily snails (taken in significantly greater quantities than by other woodcreepers at site), beetles, spiders, various orthopterans, ants and caterpillars, but also scorpions and pseudoscorpions, bugs (Hemiptera), planthoppers and cicadas (Homoptera), flies, wasps, and a few lizards. Most prey less than 10 mm in length, but spiders, orthopterans and some beetles on average larger, and caterpillars on average c. 35 mm. Usually alone, but sometimes in pairs, and often as attendant of mixed-species flocks. Considered a core follower, with high propensity for flocking; present in 5-25% of flocks studied at one site in E Mexico, and in 16% of flocks at site in W Mexico (where 82% of observations involved birds with flocks); one study demonstrated significant preference for larger flocks over smaller ones. Also regular attendant of army-ant swarms (*Eciton burchelli*, rarely *Labidus praedator*); single birds present at nearly 30% of swarms studied at site in S Mexico. Forages while hitching in spiral motion up trunks and, especially, branches, mainly from mid-levels to subcanopy, but regularly to canopy, and occasionally down to fallen logs or ground; sometimes reverses downwards or creeps along undersides of branches, like smaller *Lepidocolaptes*. Forages mainly by probing bark crevices, bromeliads and other epiphytes, and, at least on occasion, clusters of dead leaves; at times observed to pry off loose bark to expose hidden prey, tapping lightly on dead branches, or dropping to ground to rummage among dead leaves. An ecologically plastic species that has even been seen to forage for insects on coastal mudflats among stumps left after mangroves were cleared. Over ants, alights low on trunks, dropping to ground to take prey.

**Breeding.** Specimens in breeding condition in late Mar to mid-Aug in N & C of range (Mexico to Honduras); in Mexico, nests with eggs in late Apr to early Jun in NW & E, nestlings in Jun in S, and fledglings being fed in mid-Jun to late Jul in W & S. Nests described have been low, 1-1.7 m up, in cavity amid snag or in gap between fig (*Ficus*) roots and tree, lined with fibres, wood chips or bark

flakes, in one case c. 7.5 cm across. Clutch 2-3 white eggs, average 29 × 21 mm. Annual moult in Aug-Sept overlaps with later nesting attempts.

**Movements.** Apparently resident throughout range; possibly some upslope movement in non-breeding season.

**Status and Conservation.** Not globally threatened. Fairly common to common over most of range (primarily lowlands in Mexico, Belize, Guatemala and Honduras, but in foothills in NW Costa Rica); uncommon and local at upper end of elevational range, and in lowlands of NW & N Costa Rica; now very rare at N limit of range in W Mexico (S Sonora), where previously not uncommon. Estimated density at site in NE Mexico 17.5 pairs/100 ha; home range at site in S Mexico estimated at 4 ha. A generalist species, frequenting both open and closed environments; far less dependent on true forest than are most woodcreepers, possibly an adaptation that allows it to survive at N limit of dendrocolaptid distribution. Consequently, appears only moderately sensitive to human disturbance, provided that patches of forest remain: numbers captured during study on Yucatán Peninsula increased after area was hit by a hurricane (at least where not subsequently burned).

**Bibliography.** Aleixo (2002), Anon. (1997c, 1998a), Bangs & Griscom (1932a), Bangs & Peters (1928), Binford (1989), Blake (1953), Coates-Estrada & Estrada (1989), Cory & Hellmayr (1925), Deignan (1936a), Dickey & van Rossem (1938), Edwards (1972), Edwards & Lea (1955), Elliot (1890a), Graber & Graber (1959), Gram (1998), Griscom (1932a), Haemig (1989), Howell & Webb (1995a), Hurto (1994), Jouy (1893), Klaas (1968), Land (1970), Miller, A.H. *et al.* (1957), Miller, W. de W. (1905), Monroe (1968), Navarro (1992), Paynter (1955), Peters (1913), Peterson & Chalif (1973), Puebla (2001), Raikow *et al.* (1993), Rappole & Morton (1985), Rappole & Warner (1980), Richmond (1900), Ridgway (1909, 1911), van Rossem (1945), Rowley (1966), Russell (1964), Russell & Monson (1998), Schaldach (1963), Slud (1964), Smithe (1966), Smithe & Paynter (1963), Stiles (1983b, 1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Sutton (1951a, 1951b), Sutton *et al.* (1950), Tashian (1952), Traylor (1941), Wauer (1998), Wetmore (1942, 1943), Willis (1960a, 1960b, 1983e), Winker (1995), Wood *et al.* (1986), Zimmerman & Harry (1951).

## 35. Black-striped Woodcreeper *Xiphorhynchus lachrymosus*

French: Grimparr maillé German: Schwarzzücken-Baumsteiger Spanish: Trepatroncos Pinto

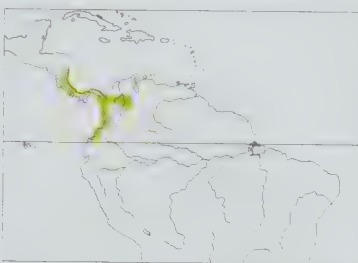
**Taxonomy.** *Dendroornis lachrymosus* Lawrence, 1862, no locality = Atlantic side of Isthmus of Panama, along line of Panama Railroad, Canal Zone, Panama.

Sister-species relationship with *X. flavigaster* has been suggested on basis of molecular data. Race *eximius* synonymized with nominate by most recent authors, but this resulted in part from apparently mistaken belief that specimens from Caribbean slope in W Panama represented *eximius* instead of nominate. Three subspecies recognized.

### Subspecies and Distribution.

*X. l. lachrymosus* (Lawrence, 1862) - Caribbean slope of Central America in E Nicaragua, Costa Rica and Panama (locally also Pacific slope from Canal Zone E to Darién), also W Colombia (in lower Atrato Valley and along Pacific coast) and NW Ecuador (S to N Pichincha, once to N Manabí).  
*X. l. eximius* (Hellmayr, 1903) - Pacific slope of SW Costa Rica and adjacent W Panama.

*X. l. alarum* Chapman, 1915 - lowlands of N Colombia (valleys of upper R Sinú, lower R Cauca and middle R Magdalena E to Santander).



**Descriptive notes.** 21.5-25 cm; 51-66 g. Strikingly marked, robust woodcreeper with bill relatively long, nearly straight, slightly decurved at tip. Nominative race has brownish-black face evenly streaked buff and without apparent supercilium; crown and nape brownish-black with buff centres of feathers, producing bold pattern of teardrop-shaped spots and broad streaks; back and scapulars similar, but more broadly streaked with deeper buff; lower back, rump and remiges dark cinnamon-rufous, outer primaries tipped dusky; inner greater coverts and lesser coverts at shoulder dark cinnamon-rufous, contrasting with re-

maining wing-coverts, which are mostly brownish-black but with a buffy central streak on medians and rufous centres of greater; tail rufous-chestnut; throat pale to deep buff, posterior feathers narrowly tipped blackish; breast and belly pale buff with brownish-black feather edges, producing scaled effect on breast but more streaked appearance on belly; sides and flanks greyish-brown with indistinct streaking, undertail-coverts brownish (sometimes rufescent) with pale buff streaks; underwing-coverts deep ochraceous buff to tawny-buff; iris dark reddish-brown to dark brown; bill dark brown to black, lower mandible silver-grey to bluish-white (base sometimes yellowish or pinkish); legs and feet green to bluish-grey or dark grey. Sexes similar. Juvenile resembles adult but pattern more muted, black edges duller and browner, also whiter below, throat more heavily scaled with sooty black, bill shorter. Size and striking pattern of black and pale-buff streaking unique among woodcreepers. Race *eximius* is similar to nominate, but black streaking below more distinct and more extensive (continuing boldly throughout belly), upper back more extensively blackish, wings and tail deeper rufous; *alarum* differs from nominate in having buffy spots on back smaller, with feathers margined narrowly with black and then more broadly with dark brown, outer web of greater coverts edged brown rather than black, also spots below smaller. Voice. Song a soft, descending whinny 2.5-4.5 seconds long, comprises 10-35 clear whistles that begin slowly, speed up, then slow at end, "wi, di, di, di, di-di-di-di-di, di, di, dev". Most common call a series of 2-4 loud, descending whistles with laughing quality, described as "weep-weep-whup", "weé-hir-hir" or "weé, ha-há"; also a loud emphatic "doweeet" or "choo-reep" with upward inflection, a descending "cheer" or "chirrrw" with rolling quality and, when agitated, a rapid series of sharp notes that rise and fall in frequency and speed, and vary from clear whistled "weet" to harsh "wik". Juvenile gives a hissing "chwahh", squeaking "screieth", and a squealing "cheir cheir cheir" that may grade into a trill.

**Habitat.** Chiefly humid lowland forest; largely tied to evergreen forest, but ranges into ecologically different mangrove forest at some sites. Mostly in interior of tall, mature forest; also regularly visits forest edge or gaps, older second growth, occasionally tree plantations. Requires somewhat patchy to continuous forest, usually with tall trees nearby. Mostly tropical zone from sea-level to 1000 m; locally higher, in subtropical zone to 1200 m in Costa Rica and 1500 m in Colombia.



**Food and Feeding.** Diet primarily arthropods, but small vertebrates also taken. Most prey caught in association with ant swarms were quite small, but larger items included cockroaches (Blattodea) and grasshoppers (Acrididae), isopods, millipedes (Diplopoda) and centipedes (Chilopoda); stomach contents comprised small to medium-sized beetles, crickets (Gryllidae), ants, cockroaches, Hemipteran bugs, cicadas (Cicadidae), moths, centipedes, spiders and spider egg sacs, also small lizards and a small frog. Larger prey (30-80 mm) often hammered on trunks and crushed in beak before being swallowed whole. Forages singly, sometimes in pairs, rarely three together (usually adults with dependent young). Regular associate of mixed-species flocks of forest canopy, less frequently those in understorey; present in only 11-14% of flocks studied at one Panamanian site, where even roosted in close proximity to other flock-members. Seen away from flocks more often than are many congeners, and noted by some authors as being found alone more often than with flocks. Relatively frequent attendant at swarms of army-ants (mostly *Eciton burchelli*, also *Labidus praedator*). Forages intently while hitching spirally up near vertical trunks and along large horizontal branches, in upper strata of forest from subcanopy to canopy (often 10-20 m up, sometimes to 30-40 m); over ant swarms, most observations of foraging 2-8 m above ground, only rarely below 1 m. Creeps along horizontal limbs far more often than do most woodcreepers, and seems to show special preference for undersides of epiphyte-laden limbs; seems also to prefer larger trunks and limbs, seen mostly on branches 6-25 cm in diameter (few observations on branches less than 5 cm across), occasionally on trunks with diameter in excess of 1 m. Most prey either gleaned from surface of trunks or branches, or caught by probing in vine tangles, clusters of dead or live leaves, epiphytes, clumps of moss, bark crevices or snags; sometimes pries off loose strips of bark, digs into rotten wood with open bill, rummages through dead leaves or debris caught in tree crotches, uses gaping to expose prey hidden in epiphytes; occasionally sallies after flying prey. Over ants forages using techniques similar to those used away from them; prey usually pecked from trunks, vines and leaves, but sometimes dives to take falling prey in mid-air, or sallies to nearby foliage; unlike most ant-following woodcreepers, seems never to sally to the ground to capture prey. Relatively aggressive over ant swarms, where regularly seen to supplant or displace smaller *Dendrocincla fuliginosa*; interactions with *X. susurrans* less frequent and less one-sided, although present species generally dominant; by contrast, usually dominated by larger *Dendrocolaptes sanctithomae*. Other birds attacked on occasion include various antbirds (Thamnophilidae), tanagers (Thraupidae), even puffbirds (Bucconidae) and trogons (Trogonidae). Intraspecific aggression also frequent, with multiple birds only rarely seen together at ant swarms, these usually adults with dependent young.

**Breeding.** Breeds Mar-Jun in Costa Rica; specimens in breeding condition in Feb-May in NW Colombia; fledged young in mid-Jul to mid-Oct in Panama. Pairs rarely observed, prompting one author to suggest that present species may remain unmated for much of year. In mid-Apr to early Jun in Panama, seen to enter narrow slit 1-1.5 m above ground in tree trunk, presumably entrance to nest-cavity; elsewhere, nest located in palm stub or hole in tree, entrance usually 0.6-6 m up, lined with wood chips and bark flakes. Clutch 2 eggs; most observations of families involved single dependent young, but some apparent families with 2 and 3 young.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Generally uncommon to fairly common, or locally common, throughout its range; absent from drier habitats, such as those in NW Costa Rica. Estimated densities at a Panamanian site 5 pairs/100 ha. Study of individually marked birds suggested that they had large and widely overlapping home ranges. Requires relatively continuous forest with tall trees and, therefore, believed to be at least moderately sensitive to forest fragmentation and other forms of human disturbance.

**Bibliography.** Aleixo (2002), Anon. (1998a), Carriker (1910), Chapman (1915b, 1917), Cory & Hellmayr (1925), Dunning (1993), Eisenmann (1952), Elliot (1890a), Gradwohl & Greenberg (1980), Granizo (2002), Greenberg (1981a), Hellmayr (1903b, 1911), Hilty & Brown (1986), Jones (1977), Karr (1971b), Karr, Robinson *et al.* (1990), Lawrence (1862), LeCroy & Sloss (2000), Loiselle (1988), Meyer de Schauensee (1950a, 1950b, 1964), Olivares (1958), Parker & Carr (1992), Peters (1931), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1909, 1911), Robbins *et al.* (1985), Slud (1960, 1964), Stiles (1983b, 1985), Stiles & Levey (1994), Stiles & Skutch (1989), Stone (1918), Sturgis (1928), Wetmore (1972), Willis (1972b, 1980, 1983c), Willis & Eisenmann (1979).

## 36. Spotted Woodcreeper

### *Xiphorhynchus erythropygius*

**French:** Grimpar tacheté **German:** Olivkappen-Baumsteiger **Spanish:** Trepatroncos Manchado  
**Other common names:** Berlepsch's/Ecuadorian/Spot-throated Woodcreeper ("aequatorialis group")

**Taxonomy.** *Dendronis erythropygia* P. L. Slater, 1860, Veracruz and Oaxaca = Jalapa, Veracruz, Mexico.

Suggested sister-species to *X. triangularis* based on genetic comparison using "aequatorialis group". The two sometimes regarded as forming a superspecies, or as conspecific; treatment as separate species supported by molecular evidence, vocalizations, apparent lack of intergradation, and elevational replacement where ranges approach (with at most, very limited sympatry on W slope of Andes in SW Colombia and W Ecuador). On basis of plumage and, to a lesser degree, voice and elevational preference, races divided into "erythropygius group" (including *parvus*) and "aequatorialis group" (including *punctigula* and *insolitus*); races within each group poorly differentiated. Five subspecies recognized.

#### Subspecies and Distribution.

*X. e. erythropygius* (P. L. Slater, 1860) - highlands of C & S Mexico (extreme SE San Luis Potosí and Hidalgo S to C Oaxaca, also Guerrero).

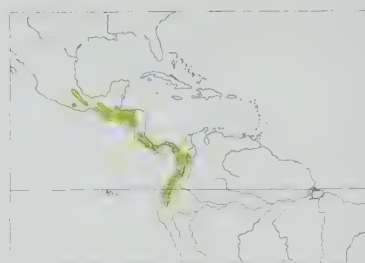
*X. e. parvus* Griscom, 1937 - S Mexican Highlands (extreme SE Oaxaca, Chiapas) and extreme NW El Salvador S to NC Nicaragua; also locally in S Belize.

*X. e. punctigula* (Ridgway, 1889) - SE Nicaragua S to C Panama (E to Veraguas).

*X. e. insolitus* Ridgway, 1909 - C & F Panama (W to Canal Zone) and NW Colombia (S along coast to N Chocó, also lower Cauca Valley (C Antioquia) and middle Magdalena Valley S to N Caldas).

*X. e. aequatorialis* (Berlepsch & Taczanowski, 1884) - Pacific slope of W Andes from W Colombia (S from C Chocó, also upper Atrato Valley) S to SW Ecuador (S to W Loja).

**Descriptive notes.** 19-24 cm; male 40-54 g, female 40-46 g. Medium-sized woodcreeper with bill relatively long, slightly decurved and gradually tapering. Nominate race has distinct buff eyering continuous with buff supercilium, dusky lores, auriculars dusky olive streaked buff; crown and nape dark olive to brownish-olive, feathers finely spotted buff and with narrow dusky fringe; back and wing-coverts brownish-olive to tawny-brown, back broadly streaked or spotted buff, rump deep cinnamon-rufous; remiges rufous-chestnut, most edged olive-brown, primaries tipped dusky; tail rufous-chestnut; throat and foreneck buffy with feathers tipped dark olive, producing a narrowly barred effect; underparts pale greenish-olive with large teardrop-shaped spots of buff that fade on flanks and undertail-coverts, which are cinnamon distally; underwing-coverts deep buff; iris dark brown; upper mandible blackish to dark brown with a whitish to pale grey stripe along cutting edges (at least in Central American birds), lower mandible whitish-horn



to pinkish-grey; legs and feet blue or greenish-grey to slate-grey. Distinguished by olive to brownish-olive coloration, buffy eyering, and boldly spotted underparts combined with long, bicoloured bill: "aequatorialis group" similar to *X. triangularis* but crown largely unmarked (at most a few fine streaks on forehead), eyering and throat buffier, throat finely spotted instead of scaled, back more heavily streaked, spots below larger, rump more extensively rufous. Female is slightly smaller than male. Juvenile is similar to adult, but browner overall, spotting below less distinct, especially on throat and belly. Race *parvus* is

similar to nominate but smaller, more rufescent above, more greenish-olive below, and throat slightly buffier and spotted rather than barred. Members of "aequatorialis group" are smaller, more greenish-olive overall, crown with only fine streaks limited to forehead, back unmarked or with finer streaks on upper back only, throat more yellowish-buff and with small dusky spots (not bars), fewer and smaller spots below, bill relatively straight and abruptly tapering only at tip; *punctigula* is very similar to *aequatorialis*, but underparts deeper olive with spots smaller and less rounded, throat more densely spotted, rump and wings lighter rufous; *insolitus* is like *punctigula* but may average slightly darker above and browner overall. **Voice.** Relatively vocal. Song, given intermittently, mostly at dawn and dusk (less frequently during day), a series 4-6.5 seconds long of 2-5 (usually 3-4) long descending whistles, each at progressively lower pitch, and sometimes followed by 1-2 additional notes at same pitch; notes either clear, rather plaintive whistles transcribed as slowing "wheeeoo, wheeeoo, wheeeoo, wheeeoo" in Mexico ("erythropygius group"), or quavering whinnies as "piiiiiiiiiiiiir, piiiiiiiiiiiiir, piiiiiiiiiiiiir", "d'ddrear, d'ddrear, d'ddrear, whew, whew" or "d-d-d-r-reeuw, d-d-d-r-reeuw, d-d-d-r-reeuw" from Costa Rica S to Ecuador ("aequatorialis group"). Calls include whistled "wheeeoo" or "hee-e-e-e-cw", a descending "jeeu" or "djeer" that is weaker and shorter than call of *X. susurrans*, and a low, hen-like "cut-uck".

**Habitat.** Humid forest in both lowlands and upper elevations. Elevational preferences vary geographically, with N populations chiefly in montane evergreen forest, cloudforest, and pine-oak (*Pinus-Quercus*) and pine woodlands of upper elevations; S populations also frequent tall evergreen forest of tropical lowlands. Seems to prefer forest heavily laden with mosses and epiphytes, not only in mountains but also where it occurs in lowlands; has been suggested as being better adapted than *X. susurrans* to traversing epiphyte-covered branches as a result of its short legs and tail, but long claws. Generally in canopy and interior of mature forest, but regularly visits forest edge, older second growth, and even tree plantations or scattered trees near forest. Mostly in upper tropical and lower subtropical zones at 600-1800 m, locally to 2200 m (occasionally 2500 m) or down to 300 m; exceptionally, near sea-level in Costa Rica, W Colombia and W Ecuador.

**Food and Feeding.** Diet mostly arthropods, but small vertebrates and, occasionally, vegetable matter also taken. Primarily cockroaches (Blattodea), beetles, crickets (Gryllidae), earwigs (Dermaptera), and spiders, less frequently small frogs and salamanders; seen feeding a large katydid (Tettigoniidae) to grown young. Stomach contents included mainly medium-sized beetles, but also a cockroach and other insects, and even seeds and fruit pulp from an unidentified melostome (Melostomataceae). Larger prey often beaten vigorously before being swallowed. Forages singly, less often in pairs, occasionally in family groups. Regular associate of mixed-species flocks of both understorey and canopy; marked seasonal variation in length of time spent with flocks, with individually marked birds at site in Costa Rica dropping out of flocks entirely in Jun-Jul, but remaining with them for average of 90 minutes at a time in Feb; present in 13% of flocks at site, but left when flocks reached boundary of its home range on 49% of occasions. Significant preference for flocks containing Golden-crowned Warbler (*Basileuterus culicivorus*), Common Bush-tanager (*Chlorospingus ophthalmicus*) and Lined Foliage-gleaner (*Syndactyla subalaris*). Adults with fledged young usually join flocks separately, each adult accompanied by a juvenile. Sometimes attends army ants (*Eciton burchelli*), usually singly. Forages primarily while hitching up trunks and especially along large branches, often with spiralling motion and regularly on undersides of horizontal branches, from mid-levels to canopy; less frequently closer to ground, down to 0.5 m, especially when at ant swarms. Most prey taken either from surface of trunks or branches by gleaning, or from clusters of dead leaves, epiphytes, clumps of moss, tree-ferns, bark crevices or snags and vine tangles by probing or rummaging; sometimes pries or flakes bark. In association with ant swarms, forages while hitching up near-vertical trunks, usually in excess of 6 cm in diameter and at heights 0.5 to 11 m above ground, by using techniques similar to those used away from ants. Special interest in epiphytes has been suggested.

**Breeding.** Breeds Mar-Jun in Costa Rica and in Panama (where also seen feeding young out of nest in late Aug); in NW Colombia, breeding-condition birds in Feb-May and nest found in mid-Sept; birds in breeding condition in Apr in S Mexico and late Jun in W Panama. Nest in cavity of palm stub or dead stump, entrance usually 2-10 m up. Clutch 2 eggs.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common or locally common in humid foothill and lower montane forests throughout range; decidedly scarce or absent in drier habitats, and uncommon near lower elevational limit. One individually marked bird in Costa Rica had a home range of 3 ha. Requires continuous to somewhat patchy forest, and thus believed to be at least moderately sensitive to forest fragmentation and other forms of human disturbance. An indicator of upper tropical montane evergreen forest of Madrean and Chiriqui-Darién Highlands in Central America, and of N Andes of South America.

**Bibliography.** Aleixo (2002), Anon. (1998a), Berlepsch & Taczanowski (1883), Binford (1989), Bjelland & Ray (1977), Blake, E.R. (1953), Blake, J.G. (1989), Blake, J.G. & Loiselle (1991), Buskirk (1976), Carriker (1910), Chapman (1917, 1926), Cory & Hellmayr (1925), Davis (1972), Edwards (1972), Edwards & Lea (1955), Eisenmann (1955), Elliot (1890a), Gómez de Silva *et al.* (1999), Griscom (1932b, 1937), Hartman (1961), Hellmayr (1911), Hilty (1997), Hilty & Brown (1986), Howell & Webb (1995a), Jones & Valley (2001), Karr, Robinson *et al.* (1990), Land (1962, 1970), Marshall (1943), Meyer de Schauensee (1950a, 1964), Miller *et al.* (1957), Monroe (1968), Navarro (1992), Orians (1969), Parker (1993), Parker & Carr (1992), Paynter (1957), Peterson & Chalif (1973), Powell (1979), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1889, 1909, 1911), Robbins *et al.* (1985), Slater (1889), Slud (1960, 1964), Stiles (1983b, 1985), Stiles & Levey (1994), Stiles & Skutch (1989), Stotz *et al.* (1996), Sturgis (1928), Wetmore (1944, 1972), Willis (1983c).

## 37. Olive-backed Woodcreeper

### *Xiphorhynchus triangularis*

**French:** Grimpar à dos olive

**Spanish:** Trepatroncos Dorsioliva  
**German:** Olivrücken-Baumsteiger



**Taxonomy.** *Dendrocolaptes triangularis* Lafresnaye, 1842, Bolivia; error = "Santa Fe de Bogotá", Colombia.

Sister-species to *X. erythropygius*. The two sometimes regarded as forming a superspecies, or as conspecific; treatment as separate species supported by molecular evidence, vocalizations, apparent lack of intergradation, and elevational replacement where ranges approach (at most, very limited sympatry on W slope of Andes in SW Colombia and W Ecuador). Described race *distinctus* (from W Andes of Colombia) synonymized with nominate; *hyalodromus* differs only slightly from nominate, but is geographically disjunct; *intermedius* intergrades with and possibly indistinguishable from *bangsi*. Four subspecies recognized.

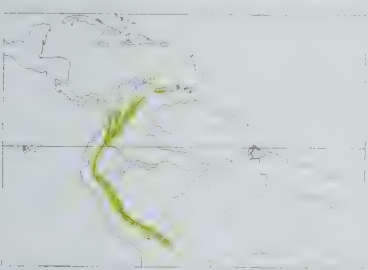
### Subspecies and Distribution.

*X. t. hylodromus* Wetmore, 1939 - coastal and interior mountains of N Venezuela (Andes in Trujillo and SE Lara, Yaracuy E to Miranda and Distrito Federal).

*X. t. triangularis* (Lafresnaye, 1842) - Andes of W Venezuela (Zulia, SW Táchira, Mérida), Colombia (W, C & E cordilleras except in W Nariño), E Ecuador and N Peru (N of R Marañón).

*X. t. intermedius* Carriker, 1935 - Andes of C Peru (Pasco, Junín).

*X. t. bangsi* Chapman, 1919 - E Andean slopes from SE Peru S to C Bolivia (La Paz, Cochabamba, W Santa Cruz), intergrades with *intermedius* in SE Peru.



**Descriptives.** 19.5-25 cm; male 40-52 g, female 32-48 g (57 g when laying). Medium-sized woodpecker with bill slightly decurved and about as long as head is wide. Nominate race has narrow buffy-white eyering and supercilium standing out against finely streaked face; crown and nape blackish-brown with elongate spots of pale buff; back, wing-coverts and most of rump bright olive to brownish-olive, upper back with scattered spot-like streaks of buff; uppertail-coverts cinnamon to rufous-chestnut; remiges with inner webs cinnamon to rufous-chestnut but outer webs bright olive (rufous in wings relatively inconspicuous), tips of

primaries dusky; tail dark rufous-chestnut; throat buffy-white, feathers with blackish-brown margins producing heavily spotted appearance (especially on lower throat); dark olive below, slightly paler than above, breast heavily spotted buffy whitish, spots becoming longer and more triangular towards belly, flanks largely unmarked, undertail-coverts finely streaked; underwing-coverts ochraceous; iris dark brown; upper mandible horn-black on culmen and base, whitish to bluish-ivory along side, lower mandible grey with paler spots on side (extent of black and whitish on bill may vary geographically); legs and feet blue-grey to grey with slight olive cast. Distinguished from "*aequatorialis* group" of *X. erythropygus* mainly by more olive upperparts: more boldly spotted crown; paler and more rufous rump, wings and tail; paler throat and breast with scaly instead of spotted pattern; uniformly darker bill. Female is slightly smaller than male. Juvenile is duller than adult, with smaller spots on breast. Race *hydrolodrum* is closely similar to nominate, but brighter olive-brown above, secondaries darker and less reddish, throat paler with finer scaling, underparts lighter, more greenish-olive, and more heavily spotted; *bangsii* is also like nominate, but upperparts more rufescent (less olive) with rufous extending onto rump, crown spots larger, back more distinctly streaked, throat more whitish with fringes more olive (less blackish), spots below smaller and not extending to belly (which is narrowly streaked), undertail-coverts more finely streaked and more rufescent, bill mostly whitish with black restricted to base and tip of upper mandible; *intermedius* is intermediate between nominate and *bangsii*, being slightly browner above than nominate, and with underparts paler and browner. VOICE. Poorly known, apparently rather quiet. Song a series of hard notes that accelerates then slows, "we we we-we-we-we-WE-WE-we-we-wa"; faint song, often given repeatedly, a weak and somewhat nasal series that accelerates into a slow trill, "quee, quee QUEE-que-que-e'e'e'e". Call most often described as penetrating downslurred "keeweeeuu" or shorter "wheeer" whistle with slightly nasal ending, sometimes interspersed with a string of semi-musical notes; another call a soft series c. 1 second long of c. 15 notes, "wik-ti-ti-ti....ti-tew".

**Habitat.** Primarily evergreen forest in middle elevations of Andes. Most common in humid and very humid montane evergreen forest and cloudforest; at upper elevations sometimes in slightly stunted forest. Largely in interior of mature forest, but sometimes in older second growth or forest edge. Chiefly upper tropical and subtropical zones at 1000-2400 m; occasionally to 2700 m in Colombia and Peru, and down to 800 m in W Colombia and to 400 m on E slope of Andes in SE Colombia and Bolivia.

**Food and Feeding.** Diet not described in detail; presumably mostly insectivorous. Forages primarily by hitching up trunks, moss-covered branches and large vines, from mid-levels to subcanopy, but sometimes into canopy or closer to ground (mostly 2.5-13 m). Like most members of genus appears to forage largely by inspecting clumps of moss, less often by gleaning prey from bark surface, or probing into bark crevices and epiphytes. Forages singly or in pairs, occasionally small groups, sometimes with mixed-species flocks; presence in flocks at some sites positively correlated with that of Linedate Foliage-gleaner (*Syndactyla subularis*). Hitches up trunks, branches and large vines, from mid-levels to subcanopy, sometimes into canopy, or at times closer to ground, mostly at 2.5-13 m; seeks food mainly on moss-covered branches. Appears to forage largely by gleaning prey from bark surface or by probing into bark crevices and epiphytes; methods seemingly as for most members of genus.

**Breeding.** Season Apr-Jun in N Venezuela; in Colombia, birds in breeding condition in Apr-Jun in W & C Andes, and both a breeding-condition bird in Sept and a juvenile also in Sept in E Andes; a laying female was in body moult in mid-Apr, as were birds in mid-Sept and mid-Dec (Colombia). No other information available.

**Movements.** Apparently resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common in montane forests throughout its range. Largely restricted to mature forest, and therefore believed to be highly sensitive to human disturbance. An indicator species for montane evergreen forest in upper tropical zone of C Andes.

**Bibliography.** Aleixo (2002), Berlepsch & Stolzmann (1896), Bond (1953), Bond & Meyer de Schauensee (1940), Carriker (1935b), Chapman (1917, 1919), Clements & Shany (2001), Cory & Hellmayr (1925), Elliot (1890a), Ejlselds & Krabbe (1990), Hellmayr (1911, 1920), Hilty (1997, 2003a), Hilty & Brown (1986), Meyer de Schauensee (1950a, 1964), Meyer de Schauensee & Phelps (1978), Miller (1963), Parker & Bailey (1991), Parker *et al.* (1985), Phelps & Phelps (1963), Pitman *et al.* (2002), Ridgely & Gaulin (1980), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schäfer & Phelps (1954), Selater (1889), Stotz *et al.* (1996), Taczanowski (1884), Taczanowski & Berlepsch (1885), Wetmore (1939).

**Other common names:** Plain-throated Woodcreeper ("*picrostris* group")

**Taxonomy.** *Oriolus Picus* J. F. Gmelin, 1788, in Gujanae = "Cayenne".

formerly placed along with *X. kienierii* in a separate genus, *Dendroplex*, based on morphological differences, but both later merged with *Xiphorhynchus* because of problems with identification of sketch designated as type of *Dendroplex*; morphological distinction of *Dendroplex* supported by recent analysis of molecular data, which suggested that these species are distantly related to present congeners, and closer to *Lepidocolaptes* and *Campylorhynchus*. Holotype of *Dendrognis* [= *Xiphorhynchus*] *Kienierii*, subsequently recognized as a subspecies of *X. picus* by most authors, recently found to match more recently described "*Dendroplex necopinus*", which is supported as specifically distinct from *X. picus* by vocal, ecological and molecular data. Assessment of geographic variation is complicated by marked individual variation, at least in some populations. Races fall into two groups, "*picrostris* group" (also including *choicus*, *extimus*, *dugandi*, *paraguanae*, *longirostris*, *phalara*) in Panama and N & NW South America, with remaining races constituting "*picus* group" of Amazonia and E South America; these groups treated as separate species by some authors, but not by others because of apparent hybrids from lower R Orinoco region of Venezuela; further work needed. Races similar within each group. Purported races *bahiae* (NE Brazil) and *rufescens* (NC Brazil) described on basis of average differences from nominate, but individual variation so marked that neither is considered diagnosable. Described race *borreroi* from S Colombia (E base of Andes in Caquetá) apparently not distinguishable from *peruvianus*, which itself is possibly indistinguishable from *saturator*. Race *choicus* poorly differentiated from *picrostris*. Thirteen subspecies recognized.

### Subspecies and Distribution.

*X. p. extimus* (Griscom, 1927) - C & E Panama (Pacific slope from E Azuero Peninsula E to Darién, also Caribbean slope locally in Canal Zone) and NW Colombia (valleys of lower R Atrato and upper R Sinú, in Córdoba).

*X. p. dugandi* (Wetmore & Phelps, Sr., 1946) - NW Colombian lowlands from S Santa Marta region E to Perijá Mts. and S along Pacific coast to N Chocó and in Magdalena Valley to N Huila.

*X. p. picrostris* (Lafresnaye, 1847) - coastal lowlands of N Colombia (NW Santa Marta region E to Guajira Peninsula) and extreme NW Venezuela (E to mouth of L. Maracaibo).

*X. p. paraguanae* Phelps, Sr. & Phelps, Jr., 1962 - NW Venezuela (Falcón, N Lara).

*X. p. choicus* (Wetmore & Phelps, Sr., 1946) - coastal NC Venezuela (E Falcón E to Miranda).

*X. p. longirostris* (Richmond, 1896) - Margarita I, off N Venezuela.

*X. p. phalara* (Wetmore, 1939) - N Venezuela (Ilanos of interior from Portuguesa, W Apure and NW Bolívar E to E Anzoátegui, and along NE coast E to Sucre).

*X. p. saturation* (Hellmayr, 1925) - E base of E Andes in Colombia (Norte de Santander S probably to Meta) and W Venezuela (C & S Maracaibo basin in S Zulia, NW Táchira, W Mérida).

*X. p. duidae* (J. T. Zimmer, 1934) - upper R Orinoco and upper R Negro in E Colombia (E Vichada), S Venezuela (NW Bolivar, N Amazonas) and adjacent NW Brazil.

*X. p. altirostris* (Léotaud, 1866) - Trinidad.  
*X. p. deltanus* Phelps, Sr. & Phelps, Jr., 1952 - NE Venezuela (Delta Amacuro).

*X. p. picus* (J. F. Gmelin, 1788) - S Venezuela (S Anzoátegui, S Monagas, E Bolívar), the Guianas and N & E Brazil (lower R Negro E to Amapá and, S of Amazon, from R Madeira E to Ceará and

Pernambuco, S to Goiás and, on Atlantic coast, to N Rio de Janeiro); unclear whether birds in SW Brazil (Pantanal) or those in NW Brazil (N bank of R Solimões) and adjacent SE Colombia & NE Ecuador refer to nominate race or *peruvianus*.

*X. p. peruvianus* (J. T. Zimmer, 1934) - SW Amazonia, S of Amazon, from E Peru and W Amazonian Brazil (E to R Juruá, possibly to R Madeira) S to N & E Bolivia (S to Cochabamba and Santa Cruz).

**Descriptive notes.** 18–22 cm; male 34–42 g, female 33–45 g (mainland), female 51 g (*altirostris*). Slim, medium-sized woodcreeper with a distinctive bill combining straight culmen with upward-sweeping lower mandible. Nominate race has indistinct whitish eyering (most evident below eye) and weak supercilium contrasting with dusky postocular stripe, brown auriculars with bold buffy-white streaking; forehead whitish; crown and nape dark brown to blackish with buffy-white streaks, these increasing in size and length on nape; back, scapulars and lesser coverts warm olive-brown to reddish-brown, with at most a

new fine streaks on upper back, remaining wing-coverts mostly rufescent; lower back, rump, remiges and tail rufous-chestnut; primaries and outer secondaries tipped dusky brown, these tips increasing in extent on outermost primaries; central rectrices darker than outers, thus contrasting with rump; chin and throat buffy white, feathers of throat narrowly fringed dark brown to black, indistinct malar stripe separating buffy submoustachial region from throat; lower throat and upper breast with oval centres of feathers pale buff surrounded by black fringes that continue uninterrupted around tip, resulting in boldly scaled appearance; remaining underparts brown, sometimes more olive on belly; scaling of upper breast becomes narrower and more linear on lower breast, upper belly, sides and flanks, leaving belly largely unmarked but undertail-coverts again have buffy-whitish streaks; underwing-coverts cinnamon-rufous; iris reddish-brown to dark brown; bill light greyish-horn or brownish to dull whitish (sometimes with pinkish or lilac tinge), base of upper mandible dusky or blackish, lower mandible often paler; legs and feet various shades of green, grey, bluish-grey or brownish. Distinguished from very similar *X. kienerii* by straighter to slightly upturned bill, more scaly pattern on breast (more oval feather centres, complete fringes), more brownish or olive cast on belly, more rufescent tone of lesser coverts, proportionately shorter wings and tail, also by differences in vocalizations. Also similar to *X. obsoletus* but bill slightly paler and less decurved, back and underparts less boldly and less extensively streaked, overall coloration more rufescent (less olive), and vocalizations markedly different. Sexes similar. Juvenile similar, but plumage darker overall with patterns more muted, spots or streaks smaller, throat deeper buff, streaking below more extensive and deeper buff in color, and bill shorter and darker. Races vary in overall colour, face pattern, size and shape of breast spots, and throat colour. In "picus group", populations of nominate in SE Amazonia ("*rufescens*") and NE Brazil ("*bahiae*") on average more rufescent and with streaking above and below both broader and more extensive, but many individuals cannot be distinguished: *saturation* is like nominate but much darker, especially below, breast streaking more limited in extent, tail longer; *duidae* is also similar, but throat pure white, back browner, breast spotting more extensive and outlined with black, belly more strongly streaked; *deltanus* is similar to *duidae* but darker overall, with darker bill (also crown and tail darker, mantle more heavily streaked than nominate); *altirostris* is similar to nominate, but wing and bill longer, bill heavier and more strongly curved, spots on underparts larger, better defined and more extensive; *peruvianus* is brighter and more rufescent than nominate, especially above, with throat deeper



**Bibliography.** Aleixo (2002), Aleixo & Whitney (2002), Bangs & Penard (1921), Borges *et al.* (2001), Clements & Shany (2001), Cory & Hellmayr (1925), Griscom & Greenway (1941), Gyldenstolpe (1945a, 1951), Hellmayr (1910), Hilty (2003a), Marantz (1996), Mazar Barnett & Kirwan (2002b), Menegaux & Hellmayr (1906a), Meyer de Schauensee (1966), Pinto (1947, 1978), Ridgely & Tudor (1994), Sick (1993), Sneath (1908, 1909), Stone & Roberts (1934), Stoltz *et al.* (1996), Zimmer (1934c).









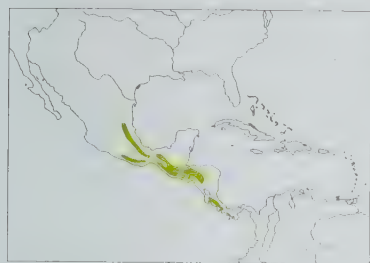


On following pages: 42. Lineated Woodcreeper (*Lepidocolaptes albolineatus*); 43. Spot-crowned Woodcreeper (*Lepidocolaptes affinis*); 44. Montane Woodcreeper (*Lepidocolaptes lacrymiger*); 45. Streak-headed Woodcreeper (*Lepidocolaptes souleyetii*); 46. Scaled Woodcreeper (*Lepidocolaptes squamatus*); 47. Scalloped Woodcreeper (*Lepidocolaptes falcinellus*).



**Descriptive notes.** 19–22 cm; 28–38 g. Relatively small to mid-sized, slim woodcreeper with slender slightly decurved bill. Nominate race has side of head and neck dusky brown with bold buff streaks; dark brown crown and nape boldly marked with buffy spots or diamonds (sometimes continuing as fine streaks onto upper back), back and wing-coverts plain brown, rump rufous-cinnamon, remiges and tail rufous-chestnut. remiges edged brown, primaries tipped dusky brown; throat unmarked buff.





conspicuous black malar stripe; underparts olive-brown, lowermost throat down to belly with broad black-edged buffy streaks, streaks becoming progressively weaker, and with dark edges less distinct, on flanks and undertail-coverts, the latter tinged cinnamon; underwing-coverts ochraceous buff; iris dark brown; bill bluish-flesh, pale grey, yellowish or dark brown, base often darker and browner, tip paler, silvery horn; legs and feet lead-grey to dull green. Distinguished from *L. lacrymiger* by somewhat larger size, more obviously streaked back, more richly buff throat; from closely similar *L. souleyetii* by spotted (not streaked) crown, less obviously spotted (not streaked) crown, less obviously spotted (not streaked) crown. Juvenile is similar to adult but darker overall, streaking below with less distinct borders, spotting on crown less conspicuous, bill shorter and darker. Race *lignicida* is much paler and greyer than nominate, both above and below; *neglectus* is browner, less olivaceous, with streaking below broader and paler, almost whitish, thus contrasting with deeper buff throat. Voice. Song a single nasal note followed by rapid, high-frequency trill of c. 20 notes that lasts 2-3 seconds, with last 4-5 notes slower and dropping in pitch, described as "syeehr, see-see-see-see-syn" or "deeeeee hihihihihihih". Other vocalizations are a series of 3-4 reedy squeaks, as "suc, swee-tswew-tswew" or "tsew, tsei-tsei"; also plaintive "cheeyup" or "deeee-deeeeh", and "huip" or squeaky "deek" that sometimes precedes a rattle like that of Hairy Woodpecker (*Picoides villosus*). All vocalizations sharper than those of *L. souleyetii*.

**Habitat.** Humid and dry forests, primarily in highlands. Most common in humid montane evergreen forest and cloudforest, and in drier deciduous, oak (*Quercus*), pine (*Pinus*) and pine-oak woodlands; reaches timber-line in some places, but during winter also descends rarely to upper reaches of lowland rainforest or arid hill country. Frequents interior of mature forest, but possibly more common in older second growth, fragmented forest, and forest edge; also occurs in plantations, and on scattered trees in highland clearings and pastures. Roosts singly in tree cavities, retiring late at dusk and leaving in pre-dawn hours. Mostly subtropical zone, less often upper tropical and temperate zones, 1200-3100 m, occasionally to 3600 m, or down to 750 m (rarely 400 m), especially during winter; apparently descends lower on Caribbean slope (to 1200 m, rarely 750 m) than on Pacific slope (to 1500 m) in Costa Rica. Elevational overlap with *L. souleyetii* minimal on Caribbean slope (and at elevation where both species are scarce), but the two completely separated on Pacific slope.

**Food and Feeding.** Chiefly insectivorous. Contents of one stomach 90% arthropods, with nearly 40% of total representing various beetles; in another study, with larger sample sizes, most prey were beetles or egg cases, with various orthopterans, spiders, insect larvae, earwigs (Dermaptera), bugs and other items also taken. Relatively little prey taken is of type that actively flies to escape predation. Single birds, less frequently pairs, are regular attendants of mixed-species flocks; present in 63-67% of flocks encountered in one study, but only 25% in another; more often associates with flocks than does *L. souleyetii*, but sometimes found in same flocks. Sometimes forages at swarms of army ants (both *Eciton burchelli* and *Labidus praedator*); at one Panamanian site, present at 20-25% and 8-10% of swarms encountered in continuous forest and shade-coffee plantations, respectively. Forages primarily on moss-covered and epiphyte-covered branches, mostly by rapidly hitching up trunks and large branches from mid-levels to subcanopy, often with spiralling motion; less frequently closer to ground or in canopy. At a site in Costa Rica, foraged in relatively open situations, mostly between half and two-thirds up trees, on branches with average diameter 25 cm. Most prey obtained from bromeliads and other epiphytes, lichens, mosses, bark crevices or other substrates, by probing with slim bill (c. 60% in one study); significant percentage also taken after prying or lifting substrates to extract prey hidden beneath (just over 15% of total). Specializes on epiphyte-searching, at least at some sites, with nearly 75% of foraging attempts involving epiphytes (especially mat bryophytes and foliose lichens).

**Breeding.** Breeds Mar-Jun throughout range; pairs inspecting nest sites in late Mar in Costa Rica and Panama; nests with eggs mid-Apr to early Jun and with young late Apr to late Jun in Mexico and Costa Rica, also nestlings in latter period in Guatemala; adult with dependent juvenile in late Jun in El Salvador. Adults in breeding condition in early Mar to mid-May in Mexico and El Salvador. Remains paired throughout year, but apparently only single brood reared annually. Nest, prepared by both adults, comprises small flakes of hard bark (new flakes brought when parents return to incubate, old ones removed when they leave), placed in natural cavity or old hole of woodpecker (Picidae) or barbet (Capitonidae) in tree or stump, nest often in clearing near forest edge, and usually at mid-level or below, 0.6-9 m above ground; one cavity was just over 25 cm deep, interior width 15-22.5 cm, entrance hole only 2.5 × 5 cm. Clutch 2 pure white eggs, sometimes 3, average 30 × 21 mm; incubation by both sexes over period of 17 days, adults at one nest incubated 82% of time under observation, in sessions of 6-47 minutes (average 27 minutes); hatching is covered with grey down and has mouth-lining deep yellow, gape-flanges whitish, eyes closed; young fed frequently, by both parents (with insect larvae, also spiders, cockroaches and other items), at one nest 15 food deliveries per hour when young 13 days old, nestling period 19 days during which young are quite vocal; fledglings fed by parents for at least 1 month, young do not return to nest after fledging.

**Movements.** Largely resident; after breeding season, a few birds may descend into lowlands on Caribbean slope.

**Status and Conservation.** Not globally threatened. Fairly common to common in humid forest throughout entire range from Mexico S to W Panama, including El Salvador; uncommon to rare at lower elevational limit. Densities in three habitats in El Salvador estimated at 0.26-0.40 pairs/ha. Although this species requires at least patches of forest nearby, it is apparently less dependent on continuous forest than are many woodcreepers; is therefore considered only moderately sensitive to human disturbance.

**Bibliography.** Anon. (1998a), Baepfer (1962), Binford (1989), Bjelland & Ray (1977), Blake (1953), Buskirk *et al.* (1972), Carriker (1910), Cory & Hellmayr (1925), Davis, D.E. (1945), Davis, L.I. (1972), Dickey & van Rossem (1938), Dunning (1993), Gómez de Silva *et al.* (1999), Gram (1998), Griscom (1932b), Hartman (1961), Howell & Webb (1995a), Komar (2002), Land (1962, 1970), Martin *et al.* (1954), Meyer de Schauensee (1966), Miller *et al.* (1957), Monroe (1968), Nadkarni & Matelson (1989), Navarro (1992), Oniki (1972b), Orians (1969), Otvos (1967), Paynter (1957), Peterson & Chalif (1973), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Roberts *et al.* (2000), Sassi (1938), Short (1961), Sillett (1994), Skutch (1945b, 1969c), Slud (1964), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Sumichrast (1868), Sutton (1951a), Sutton & Burleigh (1941), Wetmore (1941, 1972), Willis & Oniki (1995), Winker (1995), Wolf (1976).

## 44. Montane Woodcreeper

### *Lepidocolaptes lacrymiger*

**French:** Grimpard montagnard **German:** Bergwald-Baumsteiger **Spanish:** Trepatroncos Montano

**Taxonomy.** *Dendrocolaptes lacrymiger* Des Murs, 1849, Mexico; error = "Santa Fe de Bogotá", Colombia.

Forms a superspecies with *L. affinis*, and treated as conspecific by most recent authors; separated on grounds of differences in plumage and voice, although vocal characters yet to be analysed in detail. Races can be divided into two groups based on morphology: N "*lacrymiger* group", also including *sneiderni* (which intergrades with nominate in Bogotá region of Colombia), *sanctaeartae* and *lafresnayi*; and S "*warszewiczi* group", also including weakly differentiated races *aequatorialis*, *carabayae*, *bolivianus* and *frigidus*. Nine subspecies recognized.

#### Subspecies and Distribution.

*L. l. sanctaeartae* (Chapman, 1912) - N Colombia (Santa Marta region).

*L. l. lacrymiger* (Des Murs, 1849) - E Andes of Colombia (from Norte de Santander S to Bogotá); also adjacent W Venezuela (Perijá Mts, Mérida Andes).

*L. l. lafresnayi* (Cabanis & Heine, 1859) - coastal cordillera of N Venezuela (Carabobo E to Miranda, and SW Sucre; recent sight record from Lara probably involved this race).

*L. l. sneiderni* Meyer de Schauensee, 1945 - Colombia S from Bogotá (except Nariño), on both slopes of W & C Andes and W slope of E range, also upper Cauca and Magdalena Valleys.

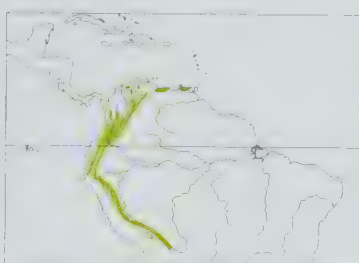
*L. l. frigidus* Meyer de Schauensee, 1951 - S Colombia (E Andean slopes in Nariño).

*L. l. aequatorialis* (Menegaux, 1912) - Pacific slope of Andes in Nariño (SW Colombia), both slopes in Ecuador (in W, S to Loja); unclear whether birds on W Slope in NW Peru refer to *aequatorialis* or *warszewiczi*.

*L. l. warszewiczi* (Cabanis & Heine, 1859) - E slope of Andes in extreme SE Ecuador and N & C Peru (Cajamarca and Amazonas S to Junin).

*L. l. carabayae* Hellmayr, 1920 - E slope of Andes in SE Peru (Cuzco, Puno).

*L. l. bolivianus* (Chapman, 1919) - E slope of Andes in NE & C Bolivia (La Paz, Cochabamba, W Santa Cruz).



**Descriptive notes.** 19-19.5 cm; male 31-35 g, female 29.5-33 g. Relatively small to medium-sized woodcreeper with slim, slightly decurved bill c. 1.5 times as long as head is wide. Nominative race has boldly streaked face, auriculars and neck, contrasting whitish supercilium (often broken); crown and nape dusky brown conspicuously dotted with whitish-buff and tipped black, these spots weaker and more streak-like on nape, and generally lacking on upper back; back uniformly rufous-brown, rump, wings and tail rufous-chestnut; throat feathers whitish to whitish-buff, edged black; underparts olive-brown with long, broad streaks of white to buffy whitish, each edged and tipped sharply with black (producing a somewhat scaly pattern); iris dark brown; bill dusky grey to bluish-horn, upper mandible more blackish, lower mandible pale grey to whitish; legs and feet olive-grey to dark horn. Differs from *L. affinis* in slightly smaller size, less richly buff throat, less obviously streaked back; Amazonian *L. albolineatus* lacks obvious spotting on crown, and *L. souleyetii* has crown streaked rather than spotted and this streaking is duller, fuzzier, and extends more extensively onto back. Male is slightly larger than female. Juvenile is similar to adult, but bill shorter and darker, streaks below less obviously tapered and only weakly edged with black dots. Members of "*lacrymiger* group" have throat feathers fringed black, and streaks below more rounded distally and both tipped and edged black, both resulting in a somewhat scaly pattern; race *sneiderni* is darker, more olive-grey overall, spots below fewer, smaller and more drop-like; *sanctaeartae* is similar to nominate, but throat paler and less obviously marked, underparts slightly greyer with streaks broader, whiter and edged (but not tipped) blackish; *lafresnayi* is similar to nominate but much paler below and more olive-brown overall, lacking rufescent tones of other races. Most members of "*warszewiczi* group" darker and more rufescent both above and below, with back more obviously streaked, throat buffy and largely unmarked, markings below deeper buff and more streak-like (more linear, and edged but not tipped black); *aequatorialis* is closely similar to *warszewiczi* but slightly more rufescent below, with throat more buffy, streaking below broader; *frigidus* is similar to *aequatorialis* but with bill darker, upperparts more olivaceous, wings longer; *carabayae* is like *warszewiczi*, but overall slightly darker, underparts more olive and more narrowly streaked, bill conspicuously shorter and more strongly curved, upper mandible largely whitish; *bolivianus* has bill shape and colour like *carabayae*, but throat more buffy, upperparts paler and less rufescent, underparts much more olivaceous with streaking broader and whiter.

**Voice.** Generally quiet. Song a 2-5 second series of 10-15 high-pitched whistles that accelerates and descends: "tsip, tsip, tsip, ts-ts-see-see, tsee, tsee-tsee-tsee-tsee" or "tsee, tsee, tsip-tsip, tsee-tsee-tsee-tsee". Other vocalizations described as series of 3 reedy squeaks ("tsee-tsee-tsee-see"), double-noted cry, and a rattle with introductory "ah".

**Habitat.** Occurs in a variety of forested habitats, primarily in middle and upper elevations. Most common in montane evergreen forest and cloudforest, but also occurs in more open woodland, montane deciduous forest, and stunted forest at high elevations (almost to tree-line). Frequents interior of mature forest, but possibly more common in older second growth and forest edge, and even found on scattered trees in highland pastures and other clearings. Mostly in subtropical zone at 1750-3000 m; less frequently upper tropical zone, rarely down to 900 m in N Venezuela and 1000-1200 m in N & W Colombia and W Ecuador, and lower temperate zone, where once to 3400 m in Colombia.

**Food and Feeding.** Diet comprises arthropods, but details not known. Usually encountered singly or in pairs among mixed-species flocks (over 70% of all observations in one study); more common in larger flocks than in smaller ones, and often associated with Montane Foliage-gleaner (*Anabacerthia striaticollis*). At one Colombian site where resident, largely dropped out of flocks during Jan and, to lesser degree, late Sept. Forages primarily by hitching rapidly up relatively slim, moss-covered branches (often 7.5-15 cm diameter) from mid-levels to subcanopy, less frequently larger trunks closer to ground, frequently creeps along undersides of branches. Although uses all levels, from near ground to 20 m up, average foraging height seems to be c. 8 m, which was about two-thirds up most trees at one site; tends to exploit lower strata when in presence of flock. Branch-climbing behaviour results in foraging in more exposed situations than is typical of most cloudforest species. Most prey picked from surface, or taken from epiphytes, crevices, mosses or other substrates by digging or probing with slim bill; specializes on epiphyte-searching at some sites. Somewhat aggressive towards other dendrocolaptids, especially larger *Xiphorhynchus triangularis*.

**Breeding.** Season Apr-Jun in N Venezuela; apparently during dry seasons in Colombian Andes, where nests with eggs in early Aug (Huila) and with young in Jul (Valle), and fledglings and juveniles seen in Dec-Jan; otherwise, birds in breeding condition in Colombia in Apr-Jul in N (Perijá Mts), May-Aug in C Andes and Mar-Jun in W Andes. Presumably remains paired throughout year, as does *L. affinis*. Nest from low to high in tree, either in natural cavity or old hole of woodpecker (Picidae). One clutch comprised 3 white eggs, 27 × 22 mm; parental care presumably by both sexes.



**Movements.** Mostly resident, but some seasonal movement to lower elevations in Venezuela (especially during wet season).  
**Status and Conservation.** Not globally threatened. Uncommon to fairly common, and locally common, in humid forest almost throughout range, but apparently rare where present in montane dry forest in N Bolivia. This species' ability to exist in second-growth and edge environments suggests that it is only moderately sensitive to human disturbance.  
**Bibliography.** Anon. (1998a), Bangs (1930), Berlepsch & Stolzmann (1896), Berlepsch & Taczanowski (1884), Boesman (1998), Bond (1953), Chapman (1912, 1917, 1926), Chipley (1976), Cory & Hellmayr (1925), Fjeldså & Krabbe (1990), Garcia & da Silva (1997), Hellmayr (1920), Hilty (2003a), Hilty & Brown (1986), LeCroy & Sloss (2000), Lönnberg & Rendahl (1922), Menegaux & Hellmayr (1906a), Meyer de Schauensee (1945, 1950a, 1950b, 1952, 1964), Meyer de Schauensee & Phelps (1978), Miller (1963), Niethammer (1953, 1956), Parker & Bailey (1991), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Pearman (1993a), Phelps & Phelps (1963), Renssen (1985), Ridgely & Gaulin (1980), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Schäfer & Phelps (1954), Selater & Salvin (1879), Stotz *et al.* (1996), Taczanowski (1882, 1884), Todd & Carriker (1922b), Willis (1986), Zimmer (1934c).

45. Streak-headed Woodcreeper  
*Lepidocolaptes souleyetii*

**French:** Grimpard de Souleyet      **Spanish:** Trepatorncos Cabecirrayado  
**German:** Lanzettstrichel-Baumsteiger  
**Other common names:** Souleyet's Woodcreeper

**Taxonomy.** *Dendrocolaptes souleyetii* Des Murs, 1849, Paita, Piura, north-west Peru. Appears to be closely related to *L. affinis*, *L. lacrymiger* and *L. albolineatus*. Races *lineaticeps*, *littoralis* and *uaireni* poorly differentiated from one another, whereas nominate and *esmeraldae* appear to represent extremes in a cline. Assessment of geographical variation complicated by marked individual and age-related variation in size, in width and extent of streaking above and below, in shade of upperparts, and in intensity of buff coloration on throat and underparts. Birds from SE Mexico to N Honduras often recognized as race *insignis*, said to differ from *compressus* in deeper buff throat and broader streaking both above and below, but neither character seems geographically related and considered better merged with latter; variation in Middle America most evident as cline of decreasing size from N to S. Seven subspecies recognized.

**Subspecies and Distribution.**  
*L. s. guerrerensis* van Rossem, 1939 - W Mexico (Sierra Madre del Sur, in Guerrero and SW Oaxaca).  
*L. s. compressus* (Cabanis, 1861) - lowlands on both slopes of Middle America from S Mexico (S Veracruz, SW Campeche, SW Chiapas) S to W Panama (E Chiriquí, W Bocas del Toro).  
*L. s. lineaticeps* (Lafresnaye, 1850) - C & E Panama (E from Canal Zone), N & E Colombia (except Santa Marta region) and W Venezuela (Táchira, W Mérida, extreme W Barinas).  
*L. s. littoralis* (Hartert & Goodson, 1917) - NW Colombia (Santa Marta region, Atlántico), N & C Venezuela (NW Zulia E to Sucre, S to Orinoco region), Guyana and extreme N Brazil (upper R Branco); also Trinidad.  
*L. s. uaireni* Phelps, Sr. & Phelps, Jr., 1950 - Known only from type locality on R Uairén, in extreme SE Venezuela (SE Bolívar).  
*L. s. esmeraldae* Chapman, 1923 - SW Colombia (Nariño) and W Ecuador (S through most of El Oro).  
*L. s. souleyetii* (Des Murs, 1849) - SW Ecuador (S El Oro, Loja) and NW Peru (S to Lambayeque).

**Descriptive notes.** 17-22 cm; 22-34 g. Slim, medium-sized woodcreeper with relatively long tail and slim, moderately long, slightly decurved bill. Nominative race has face finely streaked whitish-buff and dark brown, neck more boldly streaked, contrasting whitish-buff supercilium and eyering; forehead, crown and nape dark brown boldly streaked whitish-buff, with long narrow streaks often continuing onto upper back; back and wing-coverts rufous-olive to cinnamon-brown; rump, remiges and tail cinnamon-rufous to rufous-chestnut; primaries edged brown, tipped dusky; throat whitish-buff to pale cinnamon contrasting with greyish-olive to buffy-brown underparts, the latter heavily streaked whitish-buff, each streak edged blackish; streaks on breast and sides broad and somewhat rounded at tip, those on belly and flanks narrower and more weakly edged, those on undertail-coverts much reduced; underwing-coverts ochraceous to pale cinnamon-buff; iris dark brown; bill light brown, flesh-coloured or pale greyish-horn, base of upper mandible usually darker, base of lower mandible whitish, bluish or flesh-coloured; legs and feet greyish-green, bluish-slate or brown. Distinguished from closely similar *L. albolineatus* by mostly pale bill, paler upperparts, streaked crown; from similar *L. affinis* and *L. lacrymiger* by streaked (not spotted) crown, less extensively buffy throat not bordered by dark malar stripe, streaking more extensive on back and broader on underparts. Species of *Xiphorhynchus* that are heavily streaked below are larger and stockier, have a heavier and straighter bill, and generally are less extensively streaked. Female may be slightly smaller than male. Juvenile is dusker overall, with streaking on lower breast and belly narrower, more indistinct, and usually more weakly margined, throat duller buff with streaked or scaled appearance, undertail-coverts pale cinnamon-buff, bill shorter and usually darker. Race *esmeraldae* is like nominate, but throat and streaking below are a deeper buff in colour, streaks with less pronounced dusky margins, bill shorter. Races *lineaticeps*, *littoralis* and *uaireni* are also similar to nominate, but with upper mandible dark brownish, streaks on crown and underparts narrower, lower throat finely streaked dusky, and rufous of rump, wings and tail darker; *littoralis* differs from *lineaticeps* mainly in its smaller size, but also on average paler and less rufescent above, lighter and more buffy below; *uaireni* is darker above and below than either *lineaticeps* or *littoralis*, with throat and streaking on both crown and underparts more whitish (less buffy), crown streaks narrower, streaks below with blacker margins; *compressus* is like *lineaticeps* but darker, with broader streaking above and below, with streaks on back more extensive and often with dark margins, throat pale buff to whitish, variable, streaking sometimes even broader and throat darker buff ("insignis"); *guerrerensis* is slightly larger and somewhat paler than *compressus* (lighter red above, greyer below). **Voice.** Song, given by both members of pair, a rapid musical trill of 1-5-3 seconds, comprising 25-30 notes, sometimes on same pitch, usually with downward inflection, "quee-hee-hee-hee-hee-hee-heh"; little or no geographical variation apparent. Calls include various additional trills or chirps, some slurred, others piercing and staccato; also plaintive "pyuu" and doubled "trrew, trrew".  
**Habitat.** Occupies a variety of lowland habitats, preferring more open situations than those inhabited by most dendrocolaptids. Primarily open woodland, deciduous and gallery forests, wooded

savanna, mangroves, arid scrub, plantations, second growth, forest edge, and even rural areas with scattered trees; less often, interior of humid evergreen forest, lower montane forest, oak (*Quercus*) woodland and, in N of range, pine (*Pinus*) savannas. Roosts alone in tree cavities: enters in near darkness, leaves at first light. Mostly lowlands below 1000 m; locally in small numbers in foothills, to 1800 m in lower subtropical zone. Elevational range overlaps slightly with that of *L. affinis* on Caribbean slope (but generally not on Pacific slope) of Central America, and with that of *L. lacrymiger* in W Ecuador.

**Food and Feeding.** Feeds largely on insects, spiders and other invertebrates. Stomach contents primarily termites (Isoptera), ants and beetles, but also a variety of other items including wasps and bees, various orthopterans, pentatomid bugs, eggs and larvae of various arthropods, caterpillars and small moths, spiders, small crabs, scorpions, millipedes (Diplopoda), and even small quantities of fruit pulp from *Bromelia pinguin* (Bromeliaceae). Most prey examined in one study were 5-15 mm in size, with some items slightly larger. Usually encountered singly or in pairs, sometimes in families during breeding season; occasionally associates with mixed-species flocks (present in just over 20% of flocks at one site in Venezuelan llanos); found rarely in same flocks as *L. affinis* near upper elevational limit (especially during non-breeding season). Forages on branches and trunks (occasionally cactus stalks at some sites), mostly from mid-levels to subcanopy, sometimes higher or lower. Hitches rapidly up trunks and branches, often using spiralling motion; sometimes on larger trunks near ground or branches in canopy, and frequently creeps along undersides of branches. Seemingly more active than many woodcreepers. Most prey gleaned from surface, or taken from bark crevices, mosses or other substrates by probing with slim bill or by flaking or prying off bark or moss to expose hidden prey; only rarely digs into or pecks on decaying wood.

**Breeding.** Birds in breeding condition from mid-Mar to mid-Aug throughout range, also in Oct in Colombia; inspecting nesting cavities from late Feb, carrying nest material to cavities early Mar to early Jun, laying in late Mar to mid-Jun (mostly Apr), young in nest after mid-Apr, and juveniles in Jul-Aug; sometimes two broods per season. Remains paired throughout year. Nest in cavity of living or dead tree near (but usually not in) forest, natural cavities preferred over old woodpecker (Picidae) holes, entrance usually relatively high, 5-25 m up, exceptionally to 3 m. floor of nest-chamber usually lined with small to sometimes quite large fragments of stiff bark, in Trinidad possibly also weed stems and plant down. Clutch 2 glossy white eggs, average 26 × 19 mm; both sexes incubate but apparently only female at night; in one study sessions during day lasted 5-72 minutes (average 16-37.5 minutes), with nest unattended for periods of 2-41 minutes (average 17-21 minutes); in all, eggs attended for 60-65% of time under observation; during incubation parents frequently return to nest with a bark flake, less often leave with one; incubation period apparently 15 days; nestlings often quite vocal, fed by both parents, chiefly with insects at a rate of 1-6-4 visits per hour at one nest, depending on age of chicks; nestling period 18-19 days; neither young nor parents return to nest after fledging. At one nest, adults driven off by female *Dendrocincla anabatina*, which incubated their eggs and raised one chick to fledging. May molt before breeding cycle is completed.

**Movements.** Resident throughout range. Territories apparently settled immediately following breeding season at some sites.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of range; in Central America more common on drier Pacific slope than on humid Caribbean slope, and quite scarce at upper limit of elevational range. A widespread habitat generalist; its preference for second-growth, edge and other human-altered environments reveals a sensitivity to human disturbance that is lower than that of most woodcreepers.

**Bibliography.** Anon. (1998a), Belcher & Smoother (1936), Binford (1989), Blake (1953), Carriker (1910), Chapman (1926), Cherrie (1892), Cory & Hellmayr (1925), Darlington (1931), Davis (1972), Deignan (1936a), Dickey & van Rossem (1938), ffrench (1991), Foster (1975), Friedmann & Smith (1950), Garcia & da Silva (1997), Graber & van Rossem (1959), Grismom (1932a), Herklots (1961), Hilty (2003a), Hilty & Brown (1986), Howell, S.N.G. & Webb (1995a), Howell, T.R. (1957), Huber (1932), Karr, Robinson *et al.* (1990), Kreuger (1967), Land (1963, 1970), Lefebvre *et al.* (1992), Meyer de Schauensee (1950a, 1964), Meyer de Schauensee & Phelps (1978), Miller *et al.* (1957), Monroe (1968), Morton (1979), Olivares (1958), Orians (1969), Parker & Carr (1992), Parker *et al.* (1982), Peterson & Chalif (1973), Phelps & Phelps (1963), Poulin *et al.* (1994a), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robbins *et al.* (1985), van Rossem (1939), Russell (1964), Schäfer & Phelps (1954), Skutch (1945a, 1962, 1969c), Slud (1964, 1980), Smithe (1966), Stiles (1983b, 1985), Stiles & Levey (1994), Stiles & Skutch (1989), Stotz *et al.* (1996), Sturgis (1928), Taczanowski (1884), Tashian (1953), Vereas *et al.* (1999), Wetmore (1972), Winker (1995), Wood & Leberman (1987).

46. Scaled Woodcreeper  
*Lepidocolaptes squamatus*

**French:** Grimpard écaillé      **German:** Fleckenbauch-Baumsteiger      **Spanish:** Trepatorncos Escamado

**Taxonomy.** *Dendrocolaptes squamatus* M. H. K. Lichtenstein, 1822, State of São Paulo, Brazil. Sister-species to *L. falcinellus*; previously regarded as conspecific, but three plumage characters (crown pattern, and coloration of back and of tail) and measurements differ significantly between populations on opposite sides of R Paraíba do Sul, in N São Paulo. Genetic distance between nominate race and *wagleri* relatively small, and one specimen has a blending of characters, these together suggesting that one biological species is involved. Two subspecies recognized.

**Subspecies and Distribution.**  
*L. s. wagleri* (Spix, 1824) - NE Brazil W of R São Francisco (S Piauí, W Bahia, N Minas Gerais).  
*L. s. squamatus* (M. H. K. Lichtenstein, 1822) - E & SE Brazil, S & E of R São Francisco, from C Bahia and Minas Gerais S to N bank of R Paraíba do Sul (N São Paulo).

**Descriptive notes.** 19 cm; 27 g (*wagleri*). Slim, medium-sized woodcreeper with slim, decurved bill. Nominative race has side of head dusky with whitish streaking, whitish supercilium often weak and broken; dark brown forehead and crown, the feathers each with buffy shaft spot (producing lightly spotted appearance that does not continue onto back); bright reddish-brown back, and cinnamon-rufous rump, wings and tail; whitish throat contrasts conspicuously with breast and belly, both of which are dusky brown with boldly black-edged whitish streaks; iris reddish-brown to brown; bill horn-coloured to mostly pinkish, upper mandible darker; legs and feet olive-grey to blackish. Confusion most likely with smaller *X. fuscus*, which is more buffy in face and below, has streaking on underparts more blurry (lacking crisp, black borders), and a more prominently streaked back. Distinguished from very similar *L. falcinellus* (nowhere sympatric) by weaker supercilium, weaker and less extensive crown streaking, whiter underparts, paler crown and upperparts.



Male has slightly longer wings and tail than female. Juvenile undescribed. Race *wagleri* is slightly smaller than nominate, brighter cinnamon-rufous above with minimal contrast between crown and back, crown spotting reduced to weak shaft streaks, underparts more brownish with less conspicuous dark borders to streaks. **Voice.** Song of nominate a slurred “peédeedir” or 1-2 “chip” notes followed by short series of loud, descending “cheew, cheew, cheeer” whistles, all in c. 2 seconds. Call a single rendition of the slurred note, described as a sharp, slurred “BEEarr” or “pyeer” that is often doubled. At least some calls and possibly song of *wagleri* similar to nominate.

**Habitat.** Nominata race occurs primarily in humid and semi-humid Atlantic Forest; most common in montane evergreen forest and lowland rainforest on Atlantic slope, less so in gallery forest along W fringe of range. Race *wagleri* occupies a drier region, where forest locally distributed; largely restricted to semi-deciduous and deciduous woodland, wooded *caatinga* and gallery forest, where most leaves lost during dry season. Frequents interior of mature forest, older second growth and forest edge. Mostly upper tropical zone, but from lowlands to 1600 m, occasionally to 2000 m or more.

**Food and Feeding.** Diet poorly known; presumably arthropods based on contents of two stomachs. Single birds, occasionally pairs, often encountered in mixed-species flocks, but tends to drop out of flocks during breeding season. Forages primarily while hitching up trunks and, especially, along slim branches, from mid-levels to canopy, less frequently closer to ground.

**Breeding.** Birds in breeding condition taken in Oct in Rio de Janeiro. Noted as nesting in buildings, as well as in more natural situations. No further information.

**Movements.** Apparently resident, but less conspicuous during breeding season.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common in humid forest at all elevations in S part of range, but scarce in lowlands to N; race *wagleri* more local in occurrence. Occurs in Cavernas do Peruagu National Park, in Minas Gerais, and in Augusto Ruschi Biological Reserve, in Espírito Santo. Requires relatively intact forest, and thus highly sensitive to human disturbance. This especially true within range of *wagleri*, where loss of forest through illegal fires, and through cutting for charcoal and agricultural development, represents a significant and continuing threat. Although *wagleri* is more common than globally threatened *Xiphocolaptes falcirostris*, it occupies habitats subject to same threats as those harbouring that species. Several recently created reserves in region may protect some populations.

**Bibliography.** Berlepsch & Ihering (1885), Brooke (1983), Cory & Hellmayr (1925), Davis (1945, 1946), Dunning (1993), Ferreira de Vasconcelos & Melo-Júnior (2001), Garcia & da Silva (1997), Goerck (1999a), Hellmayr (1929b), Ihering (1898), Kirwan *et al.* (2001), Meyer de Schauensee (1966), Mitchell (1957), Monteiro & Mattos (1984), Oniki (1980), Parker & Goerck (1997), Parrini *et al.* (1999), Pelzelin (1868-1871), Pinto (1978), Reiser (1926), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993), da Silva (1995b, 1996), da Silva & Straube (1996), Silveira (1998), Stotz (1993), Stotz *et al.* (1996), Willis & Oniki (1991).

## 47. Scalloped Woodcreeper

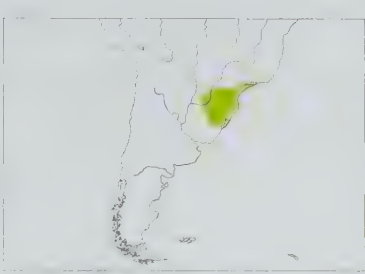
### *Lepidocolaptes falcinellus*

**French:** Grimpur festonné **Spanish:** Trepatroncos Festoneado  
**German:** Dunkelkappen-Baumsteiger

**Taxonomy.** *Thripobrotus falcinellus* Cabanis and Heine, 1859, Montevideo and Buenos Aires; error = probably São Paulo, Brazil.

Sister-species to *L. squamatus*; previously regarded as conspecific, but three plumage characters (crown pattern, and coloration of back and of tail) and measurements differ significantly between populations on opposite sides of R Paraíba do Sul, in N São Paulo; the depression associated with this river also represents a boundary for several other well-marked taxa. Monotypic.

**Distribution.** S Brazil from N São Paulo (S bank of R Paraíba do Sul) S to S Rio Grande do Sul, also adjacent SE Paraguay (Alto Paraná), NE Argentina (Misiones, NE Corrientes) and NE Uruguay.



**Descriptive notes.** 17-20 cm; 26-30 g. Medium-sized woodcreeper with relatively long, decurved bill. Adult has lores, face and bold supercilium creamy white, the last standing out conspicuously against blackish mottling of face; crown and nape dusky to dull black boldly spotted with rich buff (often continuing indistinctly as streaks onto upper back), contrasting sharply with olive-brown to cinnamon-brown back and wing-coverts, and rufous-chestnut rump and tail; outer webs of remiges brown, inner webs chestnut, tips of primaries blackish-brown; throat whitish; underparts olive, extensively and broadly streaked buff, each streak edged brown

to blackish (producing “scaly” pattern); underwing-coverts cinnamon; iris brown; upper mandible grey, light brown or pinkish (base often darker), lower mandible creamy white to light brown; legs greenish-grey to greenish-brown. Distinguished from closely similar *L. squamatus* by darker crown, darker and more chestnut tail, more conspicuous whitish supercilium, streaks on crown and underparts deeper buff, crown streaks also significantly broader. Also similar to *X. fuscus*, but larger, pale regions are more whitish, streaking on underparts has crisp blackish borders, and back is virtually unmarked. Female has slightly longer bill than male. Juvenile undescribed. **Voice.** Call a somewhat slurred rattle, described as “pit, eu-u-u”, “pee-u-u-u” or “peekku”, somewhat flatter in quality and more rattle-like than comparable calls of *L. squamatus*; lacks bubbling quality of *L. angustirostris*.

**Habitat.** Occurs in humid Atlantic Forest from lowlands into mountains; also in drier Planalto Forest in W part of range. Mostly montane evergreen forest and rainforest on Atlantic slope; also *Araucaria* forest in S of range and, less frequently, semi-deciduous forest in SW. Frequents interior of mature forest, older second growth and forest edge. Primarily upper tropical zone from lowlands to 1600 m, rarely to 2000 m.

**Food and Feeding.** Details of diet not known; presumably arthropods. Generally singly or in pairs, often in association with mixed-species flocks; present in nearly 10% of all flocks encountered at Atlantic Forest site in S São Paulo. Forages chiefly along trunks and branches from mid-levels to canopy, less frequently in understorey; sometimes creeps along undersides of horizontal branches. Most prey taken from epiphytes or bromeliads, bark crevices, mosses or other surfaces, but has been seen to sally to take aerial prey.

**Breeding.** In S of range (Rio Grande do Sul), birds in breeding condition from early Nov to early Dec, in non-breeding condition in early Mar, and possibly nesting in mid-Dec. Nest apparently in hole in tree; seen repeatedly to carry white objects to cavity 4 m up in a snag 8 m tall. Clutch 3 eggs, average 25 × 19 mm. Nothing more described of nest or other aspects of breeding biology.

**Movements.** Apparently resident throughout range.

**Status and Conservation.** Not globally threatened. Uncommon at some sites, but generally fairly common to common in humid foothill forest in core of range; possibly less common in lowlands and at W edge of range. Occurs in Itatiaia and Aparados da Serra National Parks, in Brazil, Ybicui National Park, in Paraguay, and Iguazú National Park, in Argentina. Generally believed to be highly sensitive to human disturbance; nevertheless, is able to exist in moderate numbers in older second growth and even relatively small forest fragments in S Brazil.

**Bibliography.** dos Anjos & Boçon (1999), dos Anjos & Graf (1993), dos Anjos *et al.* (1997), Azpiroz (2001), Belton (1984, 2001), Bencke & Kindel (1999), Berlepsch & Ihering (1885), Cory & Hellmayr (1925), Esteban (1948), Garcia & da Silva (1997), Höfling & Lencioni (1992), Ihering (1898), Laubmann (1940), Machado (1999), Mauricio & Dias (2001), Narosky & Yzurieta (1993), Narosky *et al.* (1983), Oniki (1981), Parker & Goerck (1997), de la Peña (1988), de la Peña & Rumboll (1998), Pinto (1978), Ridgely & Tudor (1994), do Rosário (1996), Sick (1993), da Silva & Straube (1996), Stotz *et al.* (1996), Willis & Oniki (1981b).





48

49

ssp *sanus*

50

ssp *multistriatus*

ssp *procurvoides*

ssp *trochilirostris*

ssp *lafresnayanus*

ssp *thoracicus*

ssp *devius*

52

51

ssp *brevipennis*

ssp *napensis*

ssp *hellmayri*

PLATE 38

inches 3  
cm 8



## Genus *CAMPYLORHAMPHUS*

W. Berton, 1901

### 48. Greater Scythebill

#### *Campylorhamphus pucherani*

**French:** Grimpard de Pucheran

**Spanish:** Picoguadña Grande

**German:** Wangenstreif-Sensenschabel

**Taxonomy.** *Xiphorhynchus Pucherani* Des Murs, 1849, "Santa Fe de Bogotá", Colombia. Relationships uncertain; morphologically distinctive within genus. Variation in size, shade of rufous on upperparts, and extent of streaking on back and belly apparently individual and not geographically related. Monotypic.

**Distribution.** Locally in Andes from SW & C Colombia (in W mostly W slope in Valle and Cauca, also upper Magdalena Valley in W Huila, and along E Andean slopes S from Boyaca) S on W slope to NW Ecuador (S to Pichincha) and along E slope to SE Peru (S to Cuzco).



**Descriptive notes.** 24-30 cm; 63-78 g. Largest and heaviest-bodied scythebill, with bill stouter, shorter and not so deeply curved as that of congeners. Adult is dull rufous-brown to chestnut above, slightly darker on crown, and dark rufous-chestnut on rump, wings and tail; crown and nape with narrow buff streaks that sometimes extend to upper back; blackish-brown auriculars conspicuously framed by whitish supercilium and even bolder moustachial stripe; underparts rufous-brown to chestnut, with indistinct rusty-buff to greyish streaks on throat and breast, and sometimes upper belly; iris dark brown; bill dull pinkish-

horn to creamy grey, blackish base of culmen; legs and feet brownish-grey to dark brown. Differs from congeners especially in larger size, more boldly marked face. Sexes similar. Juvenile is more rufescent than adult, head, back and underparts with coarse, but poorly defined, buff streaking. Voice. Rarely heard. An alternating series of twitters and nasal "ik" notes, also described as "ee-ee-ee-ee-énh", and a more forceful and upward-inflected "oo-eeek" reminiscent of song of Ruddy Foilage-gleaner (*Automolus rubiginosus*); vocalizations unlike those of all congeners.

**Habitat.** One of few truly montane dendrocolaptids, occurring in variety of humid forest types from subtropical (rarely upper tropical) to lower temperate zones. Centre of abundance in mid-montane forest, where it frequents humid montane evergreen forest, cloudforest and elfin forest; at least occasionally outside forest, sometimes at forest edge, and has been found among banana trees. Primarily middle elevations of Andean slopes, 2000-2800 m; sometimes down to 900 m or up to 3250 m.

**Food and Feeding.** Diet poorly known, presumably mainly arthropods. One stomach contained small weevils, said to be common in banana trees on which bird was foraging. Only rarely encountered, then usually solitary, sometimes in large mixed-species flocks. Appears to forage largely in lower and middle strata of forest, often 1-5 m up, where it works moss-covered branches, tree-ferns, and trunks of larger trees. Hitches up trunks and branches; gleans prey from bark surface, or probes into mosses and crevices in bark.

**Breeding.** Almost unknown. Fledglings in Oct in E Ecuador; birds in Jul in Peru were in non-breeding condition and with partly ossified skull. No further information on nest, eggs or other aspects of breeding biology.

**Movements.** Presumably resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Also included in preliminary "blue list" of species at risk in Colombia. A moderate priority for future research. The most poorly known member of genus. Although linear range relatively extensive, occurs in a narrow elevational belt, and apparently quite rare and very local throughout range. Believed to be highly sensitive to human disturbance in a region where habitat loss is extensive and continuing, if not accelerating.

**Bibliography.** Chapman (1926), Collar *et al.* (1994), Dunning (1993), Fjeldså & Krabbe (1990), Goodfellow (1902), Gyldestolpe (1941a), Hilty (1985), Hilty & Brown (1986), Krabbe *et al.* (1997), Mazar Barnett & Kirwan (2002a), Meyer de Schauensee (1964), Negret (2001), Parker *et al.* (1982), Pitman *et al.* (2002), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salaman, Stiles *et al.* (2002), Stattersfield & Capper (2000), Stotz *et al.* (1996).

### 49. Black-billed Scythebill

#### *Campylorhamphus falcularius*

**French:** Grimpard à bec en faux

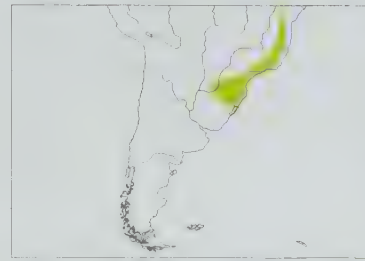
**Spanish:** Picoguadña Piquinegro

**German:** Dunkelappen-Sensenschabel

**Taxonomy.** *Dendrocopus Falcularius* Vieillot, 1822, Serra dos Órgãos, Rio de Janeiro, Brazil. Sometimes thought to form a superspecies with *C. trochilirostris*; regarded by some authors as conspecific, an arrangement disputed by most. Close relationship with *C. procurvoides* also suggested. Monotypic.

**Distribution.** SE Brazil from C Bahia (Chapada Diamantina) S to N Rio Grande do Sul, also adjacent E Paraguay (Alto Paraná, Itapúa) and NE Argentina (Misiones, NE Corrientes).

**Descriptive notes.** 24-28 cm, 37-42 g. Slim, medium-sized woodcreeper with exceptionally long, very slim, strongly decurved bill (curvature individually variable). Adult has face finely streaked clear buff and blackish, neck more coarsely streaked with similar colours, supercilium narrow and buffy-white; blackish crown and nape finely streaked whitish to ochre, with fine streaks extending onto upper back; back, wing-coverts and rump brownish to olive-brown, but wings, uppertail-coverts and tail rufous-chestnut; primaries tipped blackish-brown, rectrices with blackish shafts; whitish throat feathers edged dark olive-brown, resulting in streaked pattern; pale brown



to olive-brown below, more cinnamon on undertail-coverts, breast with narrow, indistinct whitish to creamy buff streaks that virtually disappear on belly, but appear again weakly on undertail-coverts; underwing-coverts rosy cinnamon; iris dark cinnamon-brown; bill brownish-black to black; legs and feet yellowish-green, greenish-grey or dark grey; populations from interior SE and S Brazil more rufescent overall, with crown somewhat browner, bill slightly paler. Differs most conspicuously from *C. trochilirostris* in dusky to black bill, more olive coloration above, with rufous of uppertail-coverts not extending over rump. Sexes similar. Juvenile resembles adult, but legs brown, bill shorter. VOICE. Song 3-5-4-5 seconds long, a series of 8-15 somewhat raspy or slurred notes that generally descends, but rises slightly at end, "bjeet, bjeet, bjeet, bjeet, bjeet, bjeet" or "jreet, jreet, jreet, jreet, jree-jree-jree-jree". Alarm a strident "spieh", sometimes doubled or tripled.

**Habitat.** Semi-deciduous and humid Atlantic Forest in mountains, less frequently lowlands, but also follows peninsulas and fragments of forest a short distance into somewhat drier habitats, including both *caatinga* and *cerrado*. Frequents mature evergreen forest and cloudforest, older second growth and edges; closely associated with thickets of *Guadua* bamboo. Lowlands and foothills to over 1600 m; frequents both tropical and subtropical zones but most common in upper tropical zone; in N of range largely restricted to mountains above 600 m.

**Food and Feeding.** Dietary details not known; believed to be insectivorous. Arthropods found in only stomach examined. Generally encountered alone, sometimes in pairs; regularly associates with mixed-species flocks that move through suitable habitat. Forages primarily along trunks, branches and bamboo stalks in undergrowth and mid-levels of forest, sometimes moving up into subcanopy. Moves among dense growth, probing deep into rectangular holes in hollow bamboo poles, cracks in trees, or bromeliads and other epiphytes. Prey items grasped between tips of long mandibles, before being swallowed as head jerked backwards.

**Breeding.** Nest with young ready to fly in late Sept in Paraguay (Alto Paraná); nest with eggs in late Nov and birds in non-breeding condition in Apr in NE Argentina. Nest a pile of relatively large (30-40 mm × 10-20 mm) wood chips or bark flakes, sometimes with layer of leaves on top, placed in tree cavity, in one case 1.5 m below entrance hole. Clutch 2 white eggs. Longevity records provided by two birds recaptured at site in C São Paulo, in Brazil, 5.5-6.5 years after banded.

**Movements.** Apparently resident throughout range.

**Status and Conservation.** Not globally threatened. Generally rare to locally uncommon in most of range, but fairly common at a few montane sites in SE Brazil; rare in Paraguay. Occurs in Itatiaia and Serra dos Órgãos National Parks and in Augusto Ruschi Biological Reserve, in Brazil. A forest-dependent species believed to be highly sensitive to human disturbance, which has been extensive throughout its range; present only in largest fragment surveyed in one study, and not recorded at all in most studies concentrating on forest fragments. One of relatively few woodcreepers for which monitoring of remaining populations has been recommended. An indicator species for both lowland and montane bamboo thickets, also for upper montane evergreen forest, all within Atlantic Forest region.

**Bibliography.** dos Anjos *et al.* (1997), Belton (1984), Berton (1901), Brooke (1983), Chapman (1889), Cory & Hellmayr (1925), Darrieu & Camperi (1990), Davis (1945, 1946), Dunning (1993), Esteban (1948), Ferreira de Vasconcelos & Melo-Júnior (2001), Fraga & Narosky (1985), Goerck (1999a), Hayes (1995), Ihering (1898), Lopes, L.E. *et al.* (2003), Lopes, O.S. *et al.* (1980), Machado (1999), Menges & Hellmayr (1906a), Meyer de Schauensee (1966), Narosky & Yzurieta (1993), Narosky *et al.* (1983), Olrog (1959a, 1979b), Oniki (1981), Parker & Goerck (1997), Parrini *et al.* (1999), de la Peña (1988), de la Peña & Rumboll (1998), Pinto (1978), Pinto & Camargo (1956), Reinert *et al.* (1996), Ridgely & Tudor (1994), Rodrigues *et al.* (1994), do Rosário (1996), Scott & Brooke (1985), Short (1975), Sick (1993), Sillett *et al.* (1997), da Silva (1996), Stotz *et al.* (1996), Teixeira, Otsch *et al.* (1993), Willis (1979b), Willis & Oniki (1991).

### 50. Curve-billed Scythebill

#### *Campylorhamphus procurvoides*

**French:** Grimpard à courbe **German:** Dunkler Sensenschabel **Spanish:** Picoguadña Amazónico

**Taxonomy.** *Xiphorhynchus procurvoides* Lafresnaye, 1850, "Cayenne".

Suggested as sister-species of *C. trochilirostris*, with relationships among some taxa in group unclear. Races form two groups, differing both vocally and morphologically: N "*procurvoides* group" (including poorly differentiated *sanus* and S "*multistriatus* group" (with *probat* and similar *successor*). Birds from SE Amazonia (*multistriatus*) are morphologically intermediate between *C. trochilirostris* and nominate of present species, and members of entire "*multistriatus* group" are vocally more similar to *C. trochilirostris*. Assessment of geographic variation complicated by marked individual variation in overall coloration, and extent and width of streaking on both back and underparts. Specimens from islands in lower Amazon R (near Obidos, Brazil) have been attributed to *successor*, but this is unlikely on grounds of both ecology and biogeography. Five subspecies recognized.

**Subspecies and Distribution.**

*C. p. sanus* J. T. Zimmer, 1934 - NW Amazonia, from SE Colombia (W Meta, W Caquetá), NE Ecuador (Sucumbios) and extreme NE Peru E to extreme NW Brazil (upper R Negro), S & E Venezuela (S Amazonas, NE Bolívar; sight record from Monagas) and N Guyana.

*C. p. procurvoides* (Lafresnaye, 1850) - NE Amazonia, in Surinam, French Guiana and Brazil N of Amazon (lower R Negro E to Amapá).

*C. p. successor* Todd, 1948 - SW Amazonia, S of Amazon in W Brazil from N Acre E to R Madeira; also reported from river islands in lower Amazon R in Pará (near Obidos).

*C. p. probatus* J. T. Zimmer, 1934 - SC Amazonian Brazil, S of Amazon, between R Madeira and R Tapajós, S to C Rondônia and NW Mato Grosso.

*C. p. multistriatus* (Sneath, 1907) - SE Amazonian Brazil, S of Amazon, from R Tapajós E to R Tocantins, S to NE Mato Grosso.

**Descriptive notes.** 22.5-25 cm; 30-40 g. Slim, medium-sized woodcreeper with exceptionally long, slim, strongly decurved bill. Nominate race has dark brown head and neck, olive-brown to reddish-brown wing-coverts and back, and contrasting rufous-chestnut rump, remiges and tail; fine whitish to buffy streaks on crown, face and nape, may extend narrowly and sparsely onto uppermost back;



streaks below arrow-shaped and lacking dark borders, throat scaly rather than streaked, darker and more olive (less rufescent) general coloration, strong contrast between brownish back and rufous rump, slightly smaller size and shorter legs, bill slightly darker and more deeply curved; race *multostriatus* even more similar to *C. trochilirostris* with streaking above and below just as bold, but bill much darker, more blackish, back and rump showing a marked contrast, and streaks below parrow to pointed tips. Female is slightly smaller than male. Juvenile undescribed. Race *samus* is distinctly smaller than nominate, more warmly coloured, with shorter and more strongly decurved bill, whiter throat and more streaked than scaled; *multostriatus* is quite different, with blackish head, dark rufous-brown back, darker chestnut rump and tail, whitish throat largely unmarked, streaking both above and below broader, that on upperparts black-edged and extending well down back, bill dark brown to reddish-chestnut with paler lower mandible; *probatas* and *successor* are both similar to *multostriatus*, but crown less blackish, back duller brown, throat duller and more obviously streaked (neither scaly like nominate nor unmarked like *multostriatus*), streaking both above and below usually narrower, less extensive, and with dark borders less distinct; *successor* differs from *probatas* in being both more rufescent and more heavily streaked above and below. Voice. Song, often given only in short bouts and mainly at dawn, is geographically variable. In nominate race an accelerating series 1.5-2.5 seconds long of 7-9 somewhat melancholy whistles on even pitch or falling slightly in both frequency and intensity before ending abruptly, "weeee, weé, wee, we, we, weew" or "kuweee, kuwee, kwee, wee-wee-we-we-we"; more musical and noticeably slower than that of *C. trochilirostris*. Song in Venezuelan (*samus*) begins as series of drawn-out whistles, rapidly accelerates into fast and relatively harsh rattle, "tweee, weee, weee, weee, weee, two-we-we-wi-wi-i-i-i-i-wik!" in S Amazonia (*probatas*) a rapid trill of 1.5-2 seconds and 15-25 notes, often (not always) with longer introductory note, "weeee, di, di-di-di-di-di-di-di-di-di-di-di-di-dew", more similar in quality to song of *C. trochilirostris* than to that of nominate, but trill usually ascends slightly before descending, and slows slightly at end. Most common call an explosive, relatively harsh "chit-di-dit".

**Food and Feeding.** Diet largely, if not exclusively, arthropods; stomach contents included beetle parts, a scorpion, and unidentified insects. Found singly or in pairs, usually among mixed-species flocks of understorey and, less frequently, subcanopy; at one site in French Guiana, 85-92% of observations involved birds in flocks, remaining longer than 15 minutes in 40% of flocks encountered; also found to switch between neighbouring flocks. No apparent preference for flocks led by *Thamnomanes* antshrikes (although sample limited). Forages primarily while hitching along slim to medium-sized trunks, relatively vertical limbs, large vines or bamboo poles from understorey to subcanopy, especially at 5-15 m. Most prey either gleaned from surface of trunks or branches, or taken by probing with exceptionally long bill into hidden recesses of dead bamboo stalks, ends of broken twigs and stubs, bark crevices, bromeliads and other epiphytes, clusters of hanging dead branches, or among vine tangles.

**Movements.** Presumably resident.

**Status and Conservation.** Not globally threatened. Generally uncommon and patchily distributed in core of C Amazonian range, but fairly common at a few sites with extensive bamboo thickets in S Amazonia: rare to very rare along W edge of range in SE Colombia, E Ecuador and NE Peru. Found at relatively low densities; only 1.25-2 pairs/100 ha estimated at one site in French Guiana. Highly sensitive to habitat modification, requiring nearly continuous forest. Near Manaus (Brazil) numbers much reduced following fragmentation, disappearing completely from fragments of 1 ha, and numbers significantly reduced in fragments of 10 ha. Similarly, at a site in French Guiana, the species disappeared completely following selective logging, returning only 8-12 years later, and then in much lower numbers. Considered an indicator species for tropical lowland evergreen forest in N Amazonia, and for bamboo thickets in both N & S Amazonia.

**Bibliography** Beebe (1925), Berlepsch (1908), Bierregaard (1988, 1990), Bierregaard & Levey (1989), Braun *et al.* (2000), Cadena *et al.* (2000), Chubb (1921), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1925), Dick *et al.* (1984), Friedmann (1948), Graves & Zusi (1990), Gyldestolpe (1945a, 1951), Haffer (1988), Haverschmidt & Mee's (1994), Hellmayr (1910), Hilty (2003a), Hilty & Brown (1986), Jullien & Thiollay (1998), Karr, Robinson *et al.* (1990), Mason (1996), Meyer de Schauensee (1950a), Meyer de Schauensee & Phelps (1978), Novas (1976), Novas & Lima (1990), Parker *et al.* (1997), Penard & Penard (1908-1910), Peres & Whittaker (1991), Phelps & Phelps (1963), Pinto (1978), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Sneathlage (1908, 1913, 1914), Snyder (1966), Stotz (1993), Stotz & Bierregaard (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer & Bierregaard (1995), Thiollay (1992, 1994), Thiollay & Jullien (1998), Tostain *et al.* (1992), Willard *et al.* (1991), Willis (1977), Zimmer, J.T., (1934b), Zimmer, K.J., Parker *et al.* (1997).

### Subspecies and Distribution.

*C. t. brevipennis* Griscom, 1932 - C & E Panama (N Coclé and E Panamá E to Darién) and NW Colombia (Pacific coast S to N Chocó).

*C. l. venezuelensis* (Chapman, 1889) - locally in N Colombia from Córdoba E to Magdalena Valley (S to N Huila), Caribbean lowlands and E of E Andes (Norte de Santander S to W Meta), and N & C Venezuela (E to Sucre, S to R Orinoco; locally in NW & S Bolivar); reports from French Guiana apparently refer instead to *C. procurvoides*.

*C. t. thoracicus* (P. L. Sclater, 1860) - coast of SW Colombia (SW Nariño) and W Ecuador.

*C. t. zarumillanus* Stolzmann, 1926 - coast of extreme NW Peru (Tumbes, Piura).

*C. l. napensis* Chapman, 1925 - W Amazonia in E Ecuador and E Peru.

*C. t. notabilis* J. T. Zimmer, 1934 - W Amazonian Brazil S of Amazon, between lower R Purús and lower R Madeira.

*C. t. snethlageae* J. T. Zimmer, 1934 - C Amazonian Brazil, on both banks of Amazon from R Madeira F to R Tapajós, including islands in Amazon R.

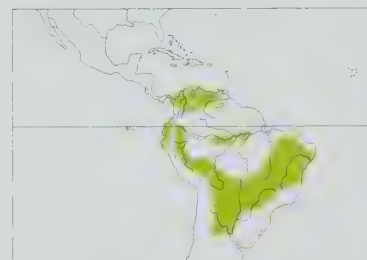
*C. t. devius* J. T. Zimmer, 1934 - SW Amazonia in N Bolivia; populations in adjacent SE Peru & W Brazil (Acre, SW Amazonas) may represent this race.

*C. t. lafresnayanus* (d'Orbigny, 1847) - C South America in E Bolivia (Santa Cruz), SW Brazil (W Mato Grosso, W Mato Grosso do Sul, possibly farther E) and W Paraguay (S to R Pilcomayo).

*C. t. hellmayri* Laubmann, 1930 - SW Paraguay (Neembucú) and N Argentina (Salta, Formosa and W Corrientes, S to La Rioja, Santiago del Estero, N Santa Fe and Entre Ríos).

C. t. major Ridgway, 1911 - interior E & S Brazil, from Piauí and Ceará S to Minas Gerais and extreme W Paraná

*C. t. trochilirostris* (M. H. K. Lichtenstein, 1820) - coastal E Brazil from Pernambuco S to SE Bahia (Ilhéus).



**Descriptive notes.** 22–28 cm; 30–55 g. Slim, medium-sized woodpecker with very long, slim, strongly decurved bill. Nominative race has finely streaked face and neck, weakly defined supercilium; brownish-olive crown and nape darker than reddish olive-brown back, crown with elongate whitish to ochraceous spots narrowly edged blackish, these becoming narrower and more elongate on nape, and reduced to fine shaft streaks on upper back; brown of back blending into cinnamon-rufous rump; remiges rufous-chestnut, tail slightly darker, wing coverts heavily edged reddish olive-brown, secondaries lightly edged with similar

colour, tips of primaries dusky; chin and throat white, throat with fine brownish streaks; underparts brown, slightly lighter than above, breast heavily streaked with buff (lacking dark marginals), streaks becoming narrower and shorter on belly and disappearing on lower belly and undertail-coverts; underwing-coverts light cinnamon to ochraceous; iris dark brown to hazel; bill bright red or reddish-brown, often dusky at tip and towards base; legs and feet greyish-olive to dull pea-green. Differs from nominate group of *C. procurviroides* in weaker contrast between back and rump, more extensive streaking on upper back, streaks above and below broader to tip (not narrowing to fine arrow-like point), legs slightly longer, bill paler, redder and less strongly curved; even more similar to "multistriatus group" of *C. procurviroides*, which is also heavily streaked above, but retaining characters still separate the species, and bill of *multistriatus* is dark-brown to reddish-chestnut; *C. falcularius* is darker overall, with back more extensively olive and rufous limited to uppertail coverts, streaking below narrower and more limited, crown and bill blackish; *C. pusillus* is also darker and more olive overall, more narrowly streaked above and below, with crown blackish, and bill brownish (less reddish) and shorter. Female is slightly smaller than male. Juvenile resembles adult, but plumage less richly coloured, streaking less clearly defined and more ochraceous, bill markedly shorter and darker (dusky blackish basally, reddish-brown distally). Within "*trochilostriis* group", race *lafresnayanus* is larger and especially longer-billed than nominate, has underparts bright tawny-ochraceous, back brighter rufous (almost same color as rump, wings, tail); *hellmayri* is larger still, with longer and more robust bill; *major* is most similar to *lafresnayanus* but links it with nominate morphologically (and geographically) in having upperparts less rufous and bill much shorter; size and bill length similar to nominate, but overall coloration slightly paler, wings and tail more cinnamon or rufous, lower throat may be more boldly streaked. Within Amazonia, *race devius* is similar to *lafresnayanus* but with bill much shorter, plumage decidedly darker, and lower throat strongly washed with buff; *sneathlageae* is similar to *devius* but underparts darker and with rufescent tinge, streaks on crown narrower, and throat whiter; *notabilis* is similar to *sneathlageae* but overall coloration paler brown, and streaking above and below both broader and whiter. Despite its Amazonian distribution, race *nepensis* is most similar to *thoracicus* but bill more strongly decurved, crown browner (less black), dark borders of streaks narrower and less conspicuous. Members of "venezuelensis group" are longer-billed than nominate, also darker overall, throat buffier and streaked more extensively and more heavily, crown blackish instead of brown, back and underparts darker olive-brown, and rump, wings and tail deeper rufous-chestnut; race *brevipennis* is darker and slightly smaller than *venezuelensis*, but has a proportionately longer bill. Birds of "thoracicus group" are similar to *venezuelensis* in coloration but streaks above and below have distinct, black borders; *zarumillanus* is said to be larger than *thoracicus*, with bill longer, more weakly curved. Voice. Song highly variable, both geographically and motivationally. Variation best documented in Venezuela, where two different songs may be given by same bird, one a rapid descending whinny of 10–25 somewhat musical notes lasting 2–2·5 seconds before ending with several slower notes, e.g., "we-he'he'he'he'-he'e'e'e'e'e'" or "tuwée-tuwée-toowa-tew-tew-tew-tew-tew-tew-tew-tew-", and the other (apparently given by agitated birds) a rapid staccato trill (30–35 notes, 2·2–5 seconds) sharply ascending, slowing slightly and sometimes doubled, "dedede'e'e'e'e'e'" or "stri'i'i'i'i'i'i'i'i'IKK!" (similar in quality and pattern to song of *Xiphorhynchus obsoletus*). In W Ecuador and NW Peru,



song is instead a descending and gradually slowing series of fewer whistled notes, "tuwee-tuweetoo-wa-tew-tew". In S of range a similar series of longer, clearer whistles that descend only slightly: in Brazilian Pantanal 13-15 notes are given in 2.5-3 seconds and described as "eep, eep, eep, eep, eep, eep, pee, pee, pee, pee, pee, pee, pee", in N Bolivia and N Argentina songs are similar in quality but possibly not in timing. When agitated, sometimes gives a descending series of loud, musical "chip" notes; when alarmed, often emits an explosive "chi-dik" that may be repeated.

**Habitat.** Occurs in a variety of wooded habitats, both in lowlands and adjacent foothills, but usually in relatively open situations. Frequents Chaco and other open woodlands, deciduous and gallery forests, *cerrado*, *caatinga*, forest islands in savanna, forest edge, second growth, and various other relatively scrubby habitats; some populations in humid evergreen forest in lowlands or premontane forest and cloud forest in foothills. In Amazonia, primarily seasonally flooded forest (especially *várzea*) and early-successional riverside cane (*Gynerium*), being replaced in adjacent *terra firme* forest by *C. procurviformis*; also in dense thickets of bamboo, where ecological separation from that species less clear. Mostly tropical lowlands and foothills to c. 1200 m; occasionally ranges into subtropical zone to 2100 m in Andean foothills and coastal cordilleras of N Venezuela.

**Food and Feeding.** Diet primarily arthropods and especially soft-bodied items such as spiders, but some vertebrate prey apparently taken. Stomach contents included various beetles, ants, flies, small Lepidoptera, cockroaches (Blattodea), millipedes (Diplopoda), parts of spiders, insect larvae, a small scorpion, a large cicada (Cicadidae), and tiny bones. Most prey for which size could be determined were relatively small, less than 20 mm, but some beetle larvae 18-25 mm. Larger items sometimes battered against tree trunks before being swallowed. Generally alone, occasionally in pairs, and often (but not always) with mixed-species flocks; present in 33% of flocks encountered at one site in Venezuelan llanos. Usually seen as it hitches up trunks and branches from upper undergrowth to subcanopy, sometimes higher or lower. At one site in SE Peru, occurred mainly in bamboo thickets, where foraging was concentrated 5-3 m above ground (about a quarter of way up 20-m canopy) and perches used had average diameter 8-3 cm; prey, however, were taken from slightly slimmer substrates averaging 6-3 cm; nearly 75% of foraging attempts were made on bamboo stalks (55-4% live stalks, 18-5% dead), with remaining 26% on other substrates. Forages primarily by probing holes and crevices in bark and bamboo poles, fallen logs, rotting wood, or clumps of moss, bromeliads or other epiphytes; in Peruvian study, over 90% of attacks on prey involved probing, with most of rest gleaning (but occasionally by prying off bits of substrate). Most prey taken from holes in bamboo poles made by, among others, various woodpeckers (Picidae). Amazon bamboo rat (*Dactylopsax dactylinus*) or Peruvian Recurvebill (*Simoxenops ucyalyae*) (46-8%), remaining substrates were bamboo nodes (19-4%) and internodes (8-1%), and non-bamboo stems (25-8%).

**Breeding.** Breeding in May-Jul in N Venezuela; nest with eggs in late Oct in Argentina (Santa Fe); immature in late Jan in Paraguayan Chaco; birds in breeding condition in Feb-Oct in Panama and N Colombia, and in Sept to mid-Nov in S Brazil (Mato Grosso do Sul, where moulting flight-feathers in May), N Bolivia, Paraguayan Chaco and N Argentina. Nest in cavity in tree or stump; one was located in hollow stump 1 m tall; another was 3-5 m up in a hollow *Gleditsia* tree, with lining of leaves and other herbaceous material from same tree. Clutch 2 smooth, white eggs, occasionally 1 or 3, size apparently varying, from 24 × 21 mm to 30 × 21 mm. A male found with a brood patch suggests extended pair-bond with parental care shared by both sexes.

**Movements.** Apparently resident and territorial throughout range.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common but locally distributed throughout most of range; quite scarce within limited region of Central America where it occurs, and scarce at upper end of elevational range. Densities at one site in SE Peru estimated at 17-6 territories/100 ha within stands of bamboo, but 8-5 territories/100 ha on site as a whole; another study in same region obtained comparable estimate of 9 territories/100 ha in early-successional growth along rivers. By contrast, much lower estimates for mature floodplain-forest, e.g. 0-5-1-4 pairs/100 ha, probably reflect patchy distribution of bamboo and presence of species only on small fraction of plot. At least some populations believed to be highly sensitive to human disturbance. Considered an indicator species for tropical lowland humid forest in Chocó lowlands of NW South America, and for bamboo thickets in both N & S Amazonia.

**Bibliography.** dos Anjos *et al.* (1997), Anon. (1998a), Becker & López (1997), Bond (1953), Carriker (1935b), Cassie (1991), Chapman (1889), Cherrie (1916a), Cintra & Yamashita (1990), Cory & Hellmayr (1925), Darrieu & Camperi (1990), Dubs (1992), Dunning (1993), Esteban (1948), Foster *et al.* (1994), Fraga & Narosky (1985), Friedmann & Smith (1950), Frisch & Frisch (1964), Griscom (1932b), Haffer (1988), Hartert & Venturi (1909), Hayes (1995), Hellmayr (1910, 1929b), Hilty (2003a), Hilty & Brown (1986), Karr, Robinson *et al.* (1990), Kratter (1995b, 1997a, 1997b), Kratter *et al.* (1993), Lima (1920), Menegaux & Hellmayr (1906a), Meyer de Schauensee (1950a, 1964), Meyer de Schauensee & Phelps (1978), Miller (1952), Narosky *et al.* (1983), Naumburg (1930), Olmos (1993), Olfrog (1963b, 1979b), Parker & Bailey (1991), Parker & Carr (1992), Parker, Parker & Plenge (1982), Parker, Stotz & Fitzpatrick (1997), Pearman (1993a), de la Peña (1977, 1988, 1999b), Phelps & Phelps (1963), Pinto (1933, 1936, 1954a, 1978), Pinto & Camargo (1956, 1961), Poulin *et al.* (1994a), Reiser (1926), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robbins *et al.* (1985), Robinson & Terborgh (1997), Rodner *et al.* (2000), Salvin (1870), Schäfer & Phelps (1954), Schubart *et al.* (1965), Sclater & Salvin (1879), Servat (1996), Short (1971, 1975, 1976), Snethlage (1913), Stone (1918), Storer (1989), Stotz *et al.* (1996), Sturgis (1928), Taczanowski (1884), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thomas (1979), Traylor (1952), Verea *et al.* (2000), Wetmore (1926, 1972), Wiedenfeld *et al.* (1985), Zimmer (1930, 1934b).

## 52. Brown-billed Scythebill

### *Campylorhamphus pusillus*

**French:** Grimpar à bec brun **German:** Brauner Sensenschnebel **Spanish:** Picoguadaña Andino

**Taxonomy.** *Xiphorhynchus pusillus* P. L. Sclater, 1860, in *Nova Grenada int.* = "Bogotá".

Central American races considered by some authors to represent a separate species "*C. borealis*". Assessment of patterns of geographical variation complicated by individual variation in general coloration and in extent of streaking. Races *borealis* and *olivaceus* poorly differentiated from one

another; variation upon which *tachirensis* and *guapiensis* based possibly individual rather than geographical. Five subspecies recognized.

#### **Subspecies and Distribution.**

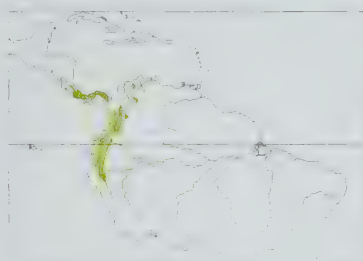
*C. p. borealis* Carriker, 1910 - Costa Rica (Caribbean slope, also in SW on Pacific slope and adjacent lowlands) and W Panama (W Chiriqui, W Bocas del Toro).

*C. p. olivaceus* Griscom, 1927 - C & E Panama (Veraguas E to E Darién).

*C. p. tachirensis* Phelps, Sr. & Phelps, Jr., 1956 - Perijá Mts and extreme E Andes in NE Colombia and NW Venezuela (W Zulía, SW Táchira).

*C. p. pusillus* (P. L. Sclater, 1860) - N & C Andes on both slopes in Colombia (except extreme NE) and Ecuador, and on E slope in N Peru (S to Cajamarca and San Martín).

*C. p. guapiensis* Romero-Zambrano, 1980 - coastal lowlands of SW Colombia (Cauca).



**Descriptive notes.** 20-25 cm; 32-48 g. Slim, medium-sized woodcreeper with long, slim, strongly decurved bill. N nominate race has side of head and neck streaked blackish-brown and buff, supercilium buffy and inconspicuous; crown and nape dark brown, narrowly streaked deep buff (streaks extending sparsely onto upper back); back and wing-coverts deep reddish-brown, rump cinnamon-rufous, and wings and tail rufous-chestnut; primaries edged greyish-brown, tipped dusky; throat deep buff with dusky streaks; underparts dark brown to olive-brown, lower belly and undertail-coverts paler and often more rufescent; lower neck, breast

and upper belly narrowly streaked deep buff, undertail-coverts finely streaked buff; underwing-coverts cinnamon-buff to ochraceous; iris dark brown to reddish-brown; bill blackish-brown to brownish-horn, upper mandible dusky at base, lower mandible paler; legs and feet olive-green to blackish-brown. Distinguished from similar *C. trochilostrius* and *C. procurviformis* by slightly shorter and brownish bill, darker and more olive general coloration (blackish on head) and, from *C. trochilostrius*, also by less extensive, narrower streaking both above and below, and deeper buff throat and streaking. Sexes similar. Juvenile is darker and more olivaceous than adult, streaking above and below broader, less distinct, deeper buff in colour, bill markedly shorter and darker. Race *tachirensis* is similar to nominate but more olive, especially below; *guapiensis* is smaller, more brownish (less olive) overall than nominate, with ochraceous streaking limited to crown, nape, breast and upper belly; *borealis* is also similar but darker overall, more blackish on crown, more olive below, with deeper buff streaking narrower but more extensive (to both upper back and middle of belly), wings and tail deeper chestnut, upper mandible darker; race *olivaceus* is slightly smaller and even darker than *borealis*, with crown black, back deeper brown, underparts more olive. Voice. Song, given primarily at dawn and dusk, a rapid, complex and highly variable series of notes lasting 2-5-5 seconds, beginning with a soft, twittering trill that continues in background during a series of loud whistles that are usually descending (sometimes ascending) and somewhat quavering, e.g. "wheéwhipwhipwhipawéé, at-t-t-t-t-weeawéawéé" or "twe-weo-WEO-weo weo-we-we-we-we-we"; sometimes shortened to descending "whip aweé, aweé, aweé", and successive songs often connected by the soft "twe" or "we" notes of trill.

**Habitat.** Humid evergreen forest, primarily in hilly regions, locally in lowlands. Prefers interior and edge of wet, epiphyte-laden cloudforest at middle elevations, less frequently older second growth; once recorded in degraded dry forest in lowlands of W Ecuador during unusually wet conditions of El Niño season (then found sympatrically with *C. trochilostrius*). Chiefly in upper tropical and subtropical zones at 600-1700 m in S Central America, but generally at 1250-2000 m (2200 m at some sites and once to 2500 m) in N & C Andes; rare and local in tropical lowlands down to 200 m at various sites along Pacific slope, and exceptionally to sea-level in SW Colombia.

**Food and Feeding.** Arthropods, including variety of beetles, earwigs (Dermaptera), ants, insect eggs and larvae, and spiders. Stomach contents included mainly beetles, but also a spider and an unspecified orthopteran. Seen singly, occasionally 2 together, most often in association with mixed-species flocks, but present in only small percentage of flocks encountered at most sites; e.g. found in fewer than 6% of flocks followed during one study in N Costa Rica, but often remained with flock for extended period, generally more than 2 hours. Forages mainly while hitching along rugged trunks (often along underside) and vines from understorey to subcanopy, less frequently among fallen logs or in canopy; seems to avoid bare trunks and limbs. Most prey gleaned from surface of trunks or major branches, or taken by probing with exceptionally long bill into hidden recesses of bark crevices, moss tufts, bromeliads and other epiphytes, clusters of palm fruits or bases of palm fronds, or among vine tangles.

**Breeding.** Recently fledged juveniles in May-Jul in Costa Rica, and birds in breeding condition in May-Jun and late Dec in Colombia. Apparently forms extended pair-bond for breeding. No information on nest, eggs or other aspects.

**Movements.** Apparently resident throughout most of range; possibly an altitudinal migrant at some sites in N.

**Status and Conservation.** Not globally threatened. Generally rare to uncommon and local throughout its montane distribution; rarer and possibly even more local at edges of range in N Costa Rica and N Peru. Invariably rare wherever it occurs in the lowlands. Believed to be highly sensitive to human disturbance, requiring extensive tracts of unbroken forest. Considered locally at risk in Chocó of SW Colombia, where it is limited by lack of habitat. An indicator species for upper tropical montane evergreen forest in N Andes.

**Bibliography.** Anon. (1998a), Becker *et al.* (2000), Blake (1961), Buskirk (1976), Carriker (1910), Chapman (1889, 1917), Cory & Hellmayr (1925), Cuervo *et al.* (2003), Dunning (1993), Griscom (1927a), Hartman (1961), Hilty (1997, 2003a), Hilty & Brown (1986), Meyer de Schauensee (1945, 1950a, 1964, 1966), Meyer de Schauensee & Phelps (1978), Olivares (1958), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Phelps & Phelps (1956, 1963), Powell (1979), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1909, 1911), Robbins *et al.* (1985), Rodner *et al.* (2000), Romero-Zambrano (1980), Salaman (1994), Salaman, Stiles *et al.* (2002), Salvin (1870), Skutch (1962), Slud (1964), Stiles (1983b, 1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Wetmore (1972).

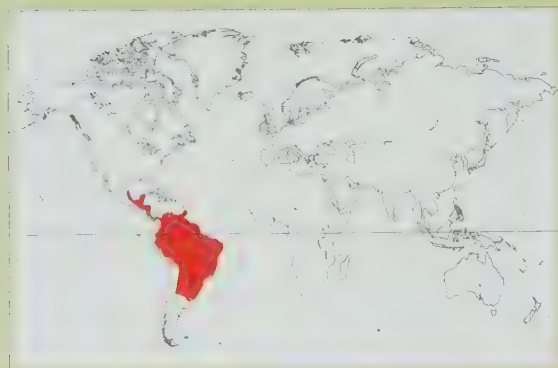


## Class AVES

## Order PASSERIFORMES

## Suborder FURNARI

## Family THAMNOPHILIDAE (TYPICAL ANTBIRDS)



- Small to medium-large birds, most with shortish wings, strong legs and feet, many with short tail but some with long graduated tail, proportionately large bill, some with hooked bill; plumage soft, generally not bright, but many with bright or white patch on back.
- 7.5-34 cm.



- Neotropical Region.
- Forest and woodland.
- 45 genera, 209 species, 516 taxa.
- 25 species threatened; none extinct since 1600.

## Systematics

Morphological studies carried out in the middle of the twentieth century demonstrated that the Thamnophilidae are a well-defined lineage, and this is supported by recent molecular analyses. With regard to relationships within the family, however, taxonomic confusion is found at all levels. Recent studies have indicated that some currently accepted subspecies are simply points on clines of plumage variation, while others appear to represent unrecognized species. Many species complexes remain ill-defined, and, although some genera comprise clearly related species, others are being shown to be polyphyletic. Relationships among the genera are uncertain, and undoubtedly there are a number of errors in the way in which the current taxonomic sequence reflects evolutionary relationships within the family.

The current systematic order for the Thamnophilidae was promulgated over 150 years ago, when fewer than 100 species were known, and the sequence has remained essentially the same since then. A revision based on comprehensive phylogenetic analysis of the family and using modern techniques remains to be accomplished. Consequently, it seems prudent for the time being to maintain largely the traditional sequence and definitions of genera and species of the Thamnophilidae as reflected in the checklist of J. L. Peters, published in 1951. In a few cases, however, rearrangement of genera and the elevation of certain subspecies to species status have received widespread acceptance following publication of peer-reviewed analysis.

Early pioneers confused antbirds with Eastern Hemisphere species, because of a resemblance between the two in physical characteristics. For example, the heavy bill and hefty look of certain antbirds resembled those of Old World shrikes (Laniidae), hence the common name of "antshrike" for such thamnophilid species (see Morphological Aspects). In 1847, the German anatomist J. Müller discovered that the syrinx of birds in a number of New World families, including the antbirds, differed substantially from that of what were then presumed to be their Old World relatives, and a more satisfactory picture could be drawn. Shortly thereafter, on the basis of Müller's work and adding considerations of external morphology, J. Cabanis and H. Burmeister published the first "modern" arrangements of the antbirds. Building on this work, P. L. Sclater and his colleagues began, in the mid-1850s, to publish a series of papers describing new species and proposing relationships, which culminated in 1890 with an arrangement in the *Catalogue of the birds in the collection of the*

*British Museum*. Sclater's taxonomic arrangement of the antbirds, which included both "typical antbirds" and "ground-antbirds", was based on external morphology, primarily on characteristics of the bill and tarsi but also on overall size, length of tail, and presence or absence of feathers around the eye. R. Ridgway's 1911 publication *Birds of North and Middle America* and C. E. Hellmayr's 1924 *Catalogue of birds of the Americas* modified some portions of Sclater's sequence, but the essence of Sclater's arrangement remains standing today with just a few prominent exceptions, most notably the separation of the typical antbirds and the ground-antbirds into two families.

In all these early classifications, typical antbirds were considered a subfamily, Thamnophilinae, and were placed in the family Formicariidae, along with the ground-antbirds, then treated as the subfamily Formicariinae. In the 1960s, anatomical differences between the two groups were noted. An initial study by M. A. Heimerdinger and P. L. Ames revealed differences in the shape of the sternum, following which, and on the basis of several features of the syrinx, Ames found that the "Formicariidae" fell into two structurally divergent groups which he called "typical antbirds" and "ground-antbirds". Then, in the latter part of the century, apparent confirmation of differences between the two antbird groups emerged in molecular studies. Prominent among these were the DNA-DNA hybridization data of C. G. Sibley and J. E. Ahlquist, which led to those authors' recommendation that typical antbirds should be treated as a separate family from the ground-antbirds. Analytical reviews of those data and other molecular studies have constantly supported that conclusion. Today, it is widely accepted that the typical antbirds and the ground-antbirds should be recognized as distinct families, the Thamnophilidae and the Formicariidae, respectively. Some molecular evidence, which needs to be verified, suggests that the two families may not even be each other's closest relatives. In the following text, the simple term "antbirds" encompasses only typical antbirds of the family Thamnophilidae.

Relationships within the Thamnophilidae remain unclear, and, as noted above, their current taxonomic treatment rests entirely on morphology, essentially external features, especially on characters obtained from examination of bills and legs. Other types of information are now becoming increasingly available, enabling the reassessment of relationships among species. Of the new methods and data, few would argue that molecular studies offer the greatest potential. To date, however, such studies have focused on a limited number of antbird species. The two most



extensive molecular studies, the DNA-DNA work of Sibley and Ahlquist and the protein-electrophoresis study of antwrens by S. J. Hackett and K. V. Rosenberg, have been used repeatedly in the following account, where they are referred to simply as "DNA-DNA" and "protein-electrophoresis" studies.

The use of nest architecture in phylogenetic studies, as exemplified most recently by the study of the Neotropical ovenbirds (Furnariidae) by K. Zyskowski and R. O. Prum, has not yet been undertaken for the antbirds. Although differences among the latter are not so dramatic as in the Furnariidae, the architecture of thamnophilid nests appears to have some value in systematic studies (also see Breeding).

Behavioural information also offers potential characters for phylogenetic analysis, and for antbirds none has received so much attention as have body movements, such as tail-pounding or wing-flicking (see General Habits), the relevance of which to a reconstruction of antbird phylogeny has been an interest in the work of E. O. Willis over almost the past forty years. Other potentially relevant aspects of behaviour, such as intraspecific displays, are now being recorded on videotape. Although scientists have started to use characters derived from antbird songs and calls as a means of defining species limits (see Voice), the application of these characters above the species level is less clear. Some vocal characteristics do appear to be common to members of apparently related taxa. Examples of vocal characteristics with possible value in phylogenetic studies include differences between species

groups in the constancy of male and female songs, in temporal relationships of response between male and female songs in duetting, in the occurrence of more than one type of intense, or loud, multi-noted song in species' repertoires, and in the structure of calls and rattles (see Voice).

Although none of these characteristics has been applied comprehensively to the family, information obtained to date, including preliminary and partial results of research, provides useful insights for continuing phylogenetic studies. The following paragraphs outline emerging data and analytical findings that point to evolutionary relationships among the 209 species of typical antbird, currently placed in 45 genera. Identifying these phylogenetic indicators helps fieldworkers to pinpoint gaps in our knowledge that may be of use in systematic studies, and offers systematists a menu of possible characters that might be included in a reconstruction of the evolution of the Thamnophilidae. Some of these traits, of course, may reflect convergence or parallel evolution, rather than being due to a common origin, but they are worth bearing in mind as being potential data for phylogenetic studies. The discussion below summarizes these insights, following the order of the current taxonomic sequence. For convenience, this is best divided into eight sections, based around the three large genera *Thamnophilus*, *Myrmotherula* and *Myrmeciza*.

The taxonomic sequence of Thamnophilidae begins with 16 antshrikes in eight genera. These precede the genus *Thamnophilus*, and are placed there primarily because of the strong, hooked bill,

Antbird taxonomy is in a state of flux. In-depth exploration, both of remote regions and of systematic relationships, has resulted in a cascade of new species during recent years.

Two such species, the **Ash-throated Antwren** and the **Ancient Antwren**, are named in honour of Ted Parker and Al Gentry, biologists at the head of their fields who died together in a tragic plane crash in the forests of South America.

The Ash-throated Antwren occupies a tiny geographical range in the Andean foothills of northern Peru; the Ancient Antwren occurs in white-sand forests of the nearby lowlands. They escaped detection until recently because of their canopy-living habits in localized habitats.

[Above: *Herpsilochmus parkeri*, Jesús del Monte, near Jerillo, San Martín, Peru. Photo: Phil Palmer.

Below: *Herpsilochmus gentryi*, Allpahuayo-Mishana Reserved Zone, Loreto, Peru. Photo: José Álvarez Alonso]





although that of one species in the group, the White-bearded Antshrike (*Biatas nigropectus*), is an exception. Molecular studies of the species in this segment of the sequence have not been undertaken, and little behavioural information is available to suggest relationships among them. Nest architecture is known for eight of the species, the nest of which is a suspended cup like that of *Thamnophilus*, except that the cup-nest of the Giant Antshrike (*Batara cinerea*), rather than being suspended, is supported by strong branches, this probably being a relatively recent adaptation to the species' large size. Characteristic body movements have been recorded for only four of the 16 species: horizontal tail wags (see General Habits) for the Black-throated Antshrike (*Frederickena viridis*) and the Undulated Antshrike (*Frederickena unduligera*), and vertical tail wags for the Collared Antshrike (*Sakesphorus bernardi*) and the Black-backed Antshrike (*Sakesphorus melanotus*), suggesting that these two pairs of species are not closely related. *Sakesphorus*, the largest genus in the group, may prove to be polyphyletic as presently defined; some of its six species are very similar to the *Thamnophilus* antshrikes in vocalizations and behaviour, and are likely to be integrated with the latter species in new groupings.

The 26 *Thamnophilus* species fit the image of prototypical antshrikes. Nests are known for 15 of the species, and are all cup-nests, typically suspended from the fork of a branch. Although DNA-DNA analysis indicates some genetic diversity within *Thamnophilus*, it provides no insights into relationships within the genus. Only a few species groups can be discerned with clarity on the basis of morphology, vocalizations and behaviour. Prominent among these is the group surrounding the Barred Antshrike (*Thamnophilus doliatus*), the type of the genus and with a range that extends from Mexico to Argentina, making it one of the two most widespread antbirds, the other being the Great Antshrike (*Taraba major*). Closely related to the Barred Antshrike are six species in which at least one sex has heavily barred plumage. All deliver similar "Loudsongs" (see Voice), an accelerating series of notes ending with an emphatic "caw". The Rufous-winged Antshrike (*Thamnophilus torquatus*) and the Rufous-capped Antshrike (*Thamnophilus ruficapillus*) are now considered part of this group on the basis of their similarly structured loudsongs and barred underparts; formerly, they were placed at the end of the *Thamnophilus* sequence on account of the smaller bill, and sometimes were put in a genus of their own, *Rhopochares*. A second species group consists of the Northern Slaty Antshrike (*Thamnophilus punctatus*) and its allies, and this offers an exam-

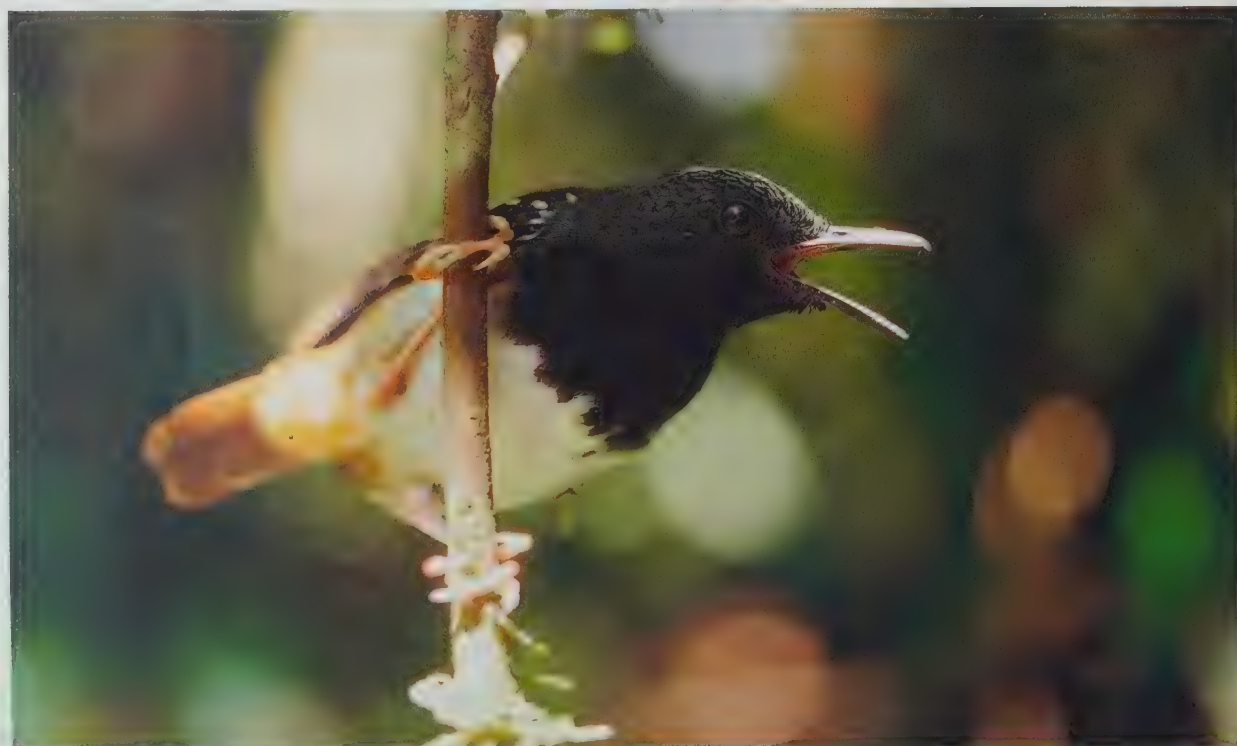
ple of the possible use of body movements in considering thamnophilid relationships. This complex was formerly considered to constitute a single species, but studies in the late 1990s by M. L. and P. R. Isler and B. M. Whitney revealed that it would be better treated as consisting of six species. Five of these, however, exhibit a rapid downward flicking or quivering of the tail as they move about, whereas the sixth, the Western Slaty Antshrike (*Thamnophilus atrinucha*), does not. This suggests that the latter may not be a member of this clade, a possibility strengthened by the fact that its rattle-calls (see Voice) are more similar to those of species outside the "slaty antshrike complex", in the genera *Thamnophilus* and *Sakesphorus*, than to those of species within it. Beyond these two species groups, obviously close relationships based on morphology, vocalizations and behaviour are found only in species pairs. These include the Black (*Thamnophilus nigriceps*) and Cocha Antshrikes (*Thamnophilus praecox*), the Blackish-grey (*Thamnophilus nigrocinereus*) and Castelnau's Antshrikes (*Thamnophilus cryptoleucus*), the White-shouldered



Since 1990, altogether 19 new species of thamnophilid have been recognized; nine of these were previously undescribed, and ten were elevated from subspecies or synonymized taxa. The Allpahuayo Antbird and the race centunculorum of the Northern Chestnut-tailed Antbird are examples of the former category, although the Northern Chestnut-tailed Antbird as a whole is an example of the latter! The two taxa pictured here were described in 2002, following fieldwork in the white-sand forests which occur near the city limits of Iquitos, northern Peru. Discoveries such as these not only highlight the importance of soil and geology as factors determining bird distributions, but serve as a reminder of how much remains to be discovered about birds in South America, even in relatively well-studied and heavily populated regions.

[Above: *Percnostola arenarum*.

Below: *Myrmeciza castanea centunculorum*. Allpahuayo-Mishana Reserved Zone, Loreto, Peru. Photos: José Álvarez Alonso]





(*Thamnophilus aethiops*) and Uniform Antshrikes (*Thamnophilus unicolor*), and the Plain-winged (*Thamnophilus schistaceus*) and Mouse-coloured Antshrikes (*Thamnophilus murinus*). The strengths of relationships between species in these pairs remain to be tested in molecular studies, and relationships among them and with other antshrikes are uncertain.

Following *Thamnophilus* and constituting the third section are 19 species of antshrike, antvireo and bushbird, a pot-pourri consisting mostly of fairly large species with a moderately strong, hooked bill or an unusual bill. The group is quite diverse and, although discussed in current taxonomic order, undoubtedly includes some species the roots of which lie elsewhere. The placement here of the Spot-winged Antshrike (*Pygiptila stellaris*), the sole member of its genus, will almost certainly prove to be an error, but this species' relationships are quite a mystery. According to DNA-DNA studies, it is as genetically distant from *Thamnophilus* as is any other thamnophilid genus examined; further, protein electrophoresis also distanced

*Pygiptila* from the antshrikes and indicated a relationship with the *Myrmotherula* antwrens of the "stipple-throated group", discussed below. The only described nest of the Spot-winged Antshrike bears some similarity to nests of *Thamnomanes* species; on the other hand, its foraging behaviour, whereby it scurries along branches and dives into dead-leaf clusters (see Food and Feeding), differs completely from that of *Thamnomanes* and may be unique in the family, while its vocalizations are quite distinctive. *Pygiptila* is followed by the three bushbirds, which have the most unusual, upturned, bill. They are placed in the two genera *Neotantes* and *Clytactantes*, which differ principally in the extent of the upswing of the bill, but their relationships to other genera are completely unclear. Their nests are undocumented, but their loudsongs and calls, known only for *Neotantes*, are quite distinct from those of *Thamnophilus* species. The foraging behaviour of the bushbirds, which burrow into stems and vines, also suggests that they are unlikely to be close relatives of *Thamnophilus* antshrikes, but little is known that would shed light on the alternatives.

The next three species, each in a monotypic genus, more clearly fit the image of an antshrike. Whitney and G. H. Rosenberg first identified similarities in the sally-strike foraging behaviour between the Pearly Antshrike (*Megastictus margaritatus*) and the Speckled Antshrike (*Xenornis setifrons*); the perch-glean foraging behaviour of the Russet Antshrike (*Thamnites anabatinus*), however, is dissimilar. All three species build suspended cup-nests, but the single nest described for the Pearly Antshrike was decorated with leaves, showing some similarity to nests of certain *Thamnomanes* antshrikes, also sally-strike foragers, while the Speckled Antshrike's nest is built entirely of rootlets, which appears to be unusual for an antbird.

The placement of *Dysithamnus*, the largest genus in the section, seems less problematic. DNA-DNA data and protein electrophoresis both suggest that the Plain Antvireo (*Dysithamnus mentalis*) belongs on the same branch of the family tree as *Thamnophilus*. The cup-nests of *Dysithamnus* antvireos are similar in shape to, although more "decorated" (see Breeding) than, those of *Thamnophilus* antshrikes, but the vocalizations, especially the calls, of the former are quite distinct. It also appears possible that *Dysithamnus* is polyphyletic; the White-streaked Antvireo (*Dysithamnus leucostictus*), Plumbeous Antvireo (*Dysithamnus plumbeus*) and Bicoloured Antvireo (*Dysithamnus occidentalis*) may prove to be not closely related to the remaining five species centred around the Plain Antvireo.



A decade ago the scientific name "*Thamnophilus punctatus*" was used to refer to the "Slaty Antshrike", a variable species that ranged from Belize to south-east Brazil.

Following a taxonomic review based on precise locality mapping and analysis of geographical variation, this taxon was subdivided into six different species.

The original scientific name now refers only to the Northern Slaty Antshrike of Central America and northern South America. The form west of the Andes is now called the **Western Slaty Antshrike**. Its vocal

uniqueness is corroborated by differences in morphology, such as the crown colour of females being concolorous with that of the mantle, and in behaviour, for example the fact that it does not quiver its tail like other slaty antshrikes. Indeed, current evidence suggests that it is not closely related to the other slaty antshrikes.

The male **Planalto Slaty-Antshrike** is morphologically and behaviourally much more similar to other slaty antshrikes, but it is more easily differentiated by song.

[Above: *Thamnophilus atrinucha atrinucha*, Chocó-Quibdó, Colombia. Photo: J. S. Dunning/ VIREO

Below: *Thamnophilus pelzelni*, Belo Horizonte, Brazil. Photo: Roland Seitre/ BIOS]





The "*Herpsilochmus pileatus* complex" is indeed complex! Formerly treated as a single species, it has now been split into four. The **Black-capped Antwren**, the English name previously applied to the whole complex, is now used only for the form *atricapilla*, pictured here. Somewhat confusingly, the oldest scientific name within the complex, *pileatus*, has been found to apply to a form only very recently distinguished as a separate taxon, and now labelled as the *Bahia Antwren*. In their own turn, the populations formerly considered most characteristic of the whole complex have undergone changes in both scientific and vernacular names, and are now known as the *Caatinga Antwren* (*H. sellowi*).

[*Herpsilochmus atricapilla*,  
Jujuy, Argentina.  
Photo: Darío Podestá]

Turning to the final genus in this third section of the sequence, the sally-strike foraging behaviour of the four *Thamnomanes* antshrikes, as T. S. Schulenberg pointed out, differs from that of species placed in *Thamnophilus* and *Dysithamnus*, and the special role of *Thamnomanes* as leaders of mixed-species flocks (see Food and Feeding) makes them an outstanding and distinct element in the lowland Amazonian avifauna. Furthermore, DNA-DNA analysis indicates that the Dusky-throated Antshrike (*Thamnomanes ardesiacus*) is not closely related to *Thamnophilus* species. Nest architecture within *Thamnomanes* is, however, conflicting, with the Dusky-throated Antshrike and, probably, the closely related Saturnine Antshrike (*Thamnomanes saturninus*) constructing suspended cups simply decorated with leaves, whereas the Cinereous (*Thamnomanes caesi*) and Bluish-slate Antshrikes (*Thamnomanes schistogynus*) build finely wrought cups into aerial masses of leaves supported against tree trunks or on branches in the understorey. The two pairs of species differ also in the extent of bristle-like feathers around the bill (see Morphological Aspects). If future molecular studies confirm that they are each other's closest relatives, it would provide the only known example of closely related thamnophilid species that differ substantially in their nest architecture.

*Myrmotherula* antwrens, with 35 species, form the largest genus of the Thamnophilidae and constitute the fourth segment of the sequence. Nevertheless, the protein-electrophoresis study of Hackett and Rosenberg indicated that the genus was, in fact, polyphyletic, a conclusion supported by a study undertaken by J. M. Bates and co-workers, using mitochondrial-DNA sequencing, and in a cladistic analysis of morphology and vocalizations by L. A. P. Gonzaga. Hackett and Rosenberg, who examined by far the greatest number of *Myrmotherula* species, proposed that, with a few exceptions, these antwrens fall into three lineages, their recommendations being consistent with the growing knowledge of the natural history of these birds. The three groups are the "streaked", the "stipple-throated" and the "grey" assemblages. The "stipple-throated antwrens", which the results of the molecular studies suggest as being rather distantly related to their supposed congeners, are specialists in dead-leaf foraging; they differ further from other *Myrmotherula* species in plumage, especially the spotted throat, and in nest architecture, vocalizations

and territorial displays. The assemblage clearly includes eight species, from the Brown-bellied Antwren (*Myrmotherula gutturalis*) to the Rufous-tailed Antwren (*Myrmotherula erythrura*) in the current taxonomic sequence. A ninth species, the Star-throated Antwren (*Myrmotherula gularis*), has been placed in this group because of its spotted throat, but its behaviour and nest architecture suggest otherwise.

In the protein-electrophoresis study, the "streaked antwrens", named for a conspicuous aspect of the plumage not found in other *Myrmotherula* species, clustered tightly together and were more clearly related to the "grey antwrens" than to the "stipple-throated assemblage". Their nests, obviously different from those of the latter, may also differ from those of the "grey antwrens", although more data are needed. Vocally, as shown by Isler and colleagues, members of the "streaked antwren assemblage" fall into four species groups, which also differ in morphology and ecology; the variety of ecological niches which they occupy includes forest canopy, riparian habitats and Andean foothill vegetation.

The "grey antwren assemblage" is the largest of the three, and with the greatest possibility of being polyphyletic. Within the group, the Plain-winged Antwren (*Myrmotherula behni*), the Yungas Antwren (*Myrmotherula grisea*), the Unicoloured Antwren (*Myrmotherula unicolor*) and the Alagoas Antwren (*Myrmotherula snowi*) appear to form a species group, termed the "Plain-winged *Myrmotherula* Group" by Whitney and J. F. Pacheco, its members being related by morphology and vocalizations. These four species occupy a variety of habitats in a large area extending from the Andean slopes to south-east Brazil. Two of them were included in Hackett and Rosenberg's study, which indicated that they were closely related. The same authors identified the Slaty Antwren (*Myrmotherula schisticolor*), the Rio Suno Antwren (*Myrmotherula sunensis*) and Salvadori's Antwren (*Myrmotherula minor*) as another species group, also on the basis of morphology and vocalizations. The six other species in this widespread assemblage are the White-flanked Antwren (*Myrmotherula axillaris*), Ihering's Antwren (*Myrmotherula iheringi*), the Rio de Janeiro Antwren (*Myrmotherula fluminensis*), the superspecies formed by the Long-winged (*Myrmotherula longipennis*) and Band-tailed Antwrens (*Myrmotherula urosticta*), and the Grey Antwren (*Myrmotherula menetriesii*). Molecular





In line with its English name, some of the races of the **Variable Antshrike** look dramatically different, as illustrated by these two males, both from the Brazilian Atlantic Forest. Even more different are the races melanochrous from Peru, with the male mostly black, and aspersiventer from Bolivia, with the underparts scalloped with white. The complex variation in plumage pattern throughout its range, along with its unusual geographical distribution, suggest that the Variable Antshrike is a prime candidate for systematic study. The traditionally accepted eight subspecies are provisionally retained in the current format until their vocalizations are properly analysed, or until parapatry without intergradation is proven between them. On a broader scale, the relationships of the Variable Antshrike within the genus *Thamnophilus* are uncertain. Although it has been thought to form a superspecies with the Amazonian Antshrike (*T. amazonicus*), such a relationship is not supported by the evidence of behaviour or vocalizations, and indeed is considered unlikely.

[Above: *Thamnophilus caerulescens gilvigaster*, Atlantic Forest, Brazil.  
Photo: Roland Seitre/BIOS.

Below: *Thamnophilus caerulescens caerulescens*, Penedo, Rio de Janeiro, Brazil.  
Photo: Edson Endrigo]





In the antbirds, sexual dimorphism is the rule. Although a minority of species are monomorphic, males tend towards combinations of grey, black and white, whereas females tend towards brown, rufous and buff. In species that show patterns of bars or spots on the upperwing-coverts, these are often formed by white tips or fringes of black or grey feathers in males, whereas females tend to have golden, buff or rufous tips or fringes of brown feathers. In species that are heavily barred black and white in males, this pattern is often partially replaced with chestnut or brown in females. This replacement of piebald plumage in males with browner plumage in females is common in members of the "Thamnophilus doliatus complex", such as the **Bar-crested Antshrike**. It is also seen in the **Great Antshrike**, which belongs to a related monospecific genus. Traditionally, this type of dichromatism in other families is explained by the greater role played by the female in incubation, and therefore her greater need to be camouflaged. As both sexes typically share incubation and brooding in antshrikes, the explanation is less convincing in this case. Striking plumage must be so important in male-male competition, or female mate-choice, that it pays to be a bright male even if the likelihood of nest predation is increased.

[Above: *Thamnophilus multistriatus multistriatus*, San Gil, Santander, Colombia.  
Photo: J. S. Dunning/  
VIREO.

Below: *Taraba major stagurus*, São Mateus, Espírito Santo, Brazil.  
Photo: Haroldo Palo]





The antshrikes are a diverse assemblage of species, often without obvious taxonomic relationships. Most, like this **Fasciated Antshrike**,

are chunky birds, with large heads, strong legs and robust, hooked bills.

The latter feature can inflict a painful bite (as anyone who has handled an antshrike will attest!), and caused early naturalists to assume a relationship with the true shrikes (*Lanius*). Although this assumption proved incorrect, the English name has stuck. Many antshrikes live in tangled lower growth, but the Fasciated Antshrike usually frequents the mid-storey or subcanopy of forest. In this regard it is unique amongst the small subset of antbirds with bright red eyes.

[*Cymbilaimus lineatus fasciatus*,  
Curundu, Panama.  
Photo: J. S. Dunning/  
VIREO]



studies indicate a close relationship among these species, which is supported by similarities in the calls of a number of them. The suspended cup-nests built by members of the "grey antwren assemblage" are similar to those of *Thamnophilus* antshrikes, although smaller in size.

The three remaining *Myrmotherula* antwrens do not fall clearly into any of the three assemblages. The Rufous-bellied Antwren (*Myrmotherula guttata*) and the Plain-throated Antwren (*Myrmotherula huxwelli*) form a superspecies, as indicated by plumage, vocalizations, behaviour and ecology. Molecular studies and nest architecture suggest that they are closest to the "grey antwrens", but their relationships remain uncertain. The Lead-colored Antwren (*Myrmotherula assimilis*), an inhabitant of river islands, is an outlier; in the protein-electrophoresis study, it was the closest of any of the *Myrmotherula* species to the *Thamnophilus* antshrikes.

Following *Myrmotherula* as the fifth section in the taxonomic sequence are 40 species in four well-defined polytypic genera, three of them termed "antwrens", and four monotypic genera. All are presumably placed near one another because of their mostly small size and a similarity in bill morphology. Two species in monotypic genera, the Banded Antbird (*Dichrozona cincta*) and the Stripe-backed Antbird (*Myrmorchilus strigilatus*), lead the list. The first of those shares certain plumage aspects and the architecture of its suspended cup-nest with three species currently placed in the genus *Hylophylax*, which comes near the end of the family sequence. The Stripe-backed Antbird's ground-foraging behaviour and nest, as well as the qualities of its vocalizations, suggest that it is grossly misplaced at this point in the sequence, but its relationships are unclear.

The polytypic genus *Herpsilochmus*, the characteristics of which were reviewed recently by Whitney and J. Alvarez, is well defined, but its relationships with other genera are, once more, uncertain. Molecular studies, mostly employing only one species of *Herpsilochmus*, have variously located it on the same branches as *Dysithamnus* species, *Myrmotherula huxwelli* and *Drymophila* species. Nests of only two of the 15 *Herpsilochmus* antwrens are known, and they are cup-nests suspended in a fork, consistent with nests of the aforementioned species. Various relationships within *Herpsilochmus* have been suggested, these

based on vocalizations, plumage and geography. Clearest among them is a clade consisting of the Caatinga Antwren (*Herpsilochmus sellowi*), the Bahia Antwren (*Herpsilochmus pileatus*), the Black-capped Antwren (*Herpsilochmus atricapillus*), the Creamy-bellied Antwren (*Herpsilochmus motacilloides*) and the Ash-throated Antwren (*Herpsilochmus parkeri*). Superspecies are formed by Dugand's (*Herpsilochmus dugandi*) and the Spot-tailed Antwrens (*Herpsilochmus sticturus*) and by the Ancient (*Herpsilochmus gentryi*) and Todd's Antwrens (*Herpsilochmus stictcephalus*).

Placed in a monotypic genus, the Dot-winged Antwren (*Microrhopias quixensis*) is ripe for a study of species limits as it consists of a number of allopatric populations, most of which have distinct plumages and appear not to intergrade with their neighbours. Morphological characters have put *Microrhopias* close to *Formicivora*, and a suspended cup-nest is built by species in both genera. Gonzaga recently completed an extensive phylogenetic analysis, based on external morphology, syringeal morphology, vocalizations and natural-history characters, of *Formicivora* antwrens and its possible relatives, including the Marsh Antwren (*Stymphalornis acutirostris*). Results revealed that monophyly of *Formicivora* was supported only if the Marsh Antwren was included and the Narrow-billed Antwren (*Formicivora iheringi*) was excluded from the assemblage. The Marsh Antwren, the White-fringed Antwren (*Formicivora grisea*) and the Rusty-backed Antwren (*Formicivora rufa*) were found to form a clade, sister to a clade formed by the Serra Antwren (*Formicivora serrana*), the Restinga Antwren (*Formicivora littoralis*) and the Black-bellied Antwren (*Formicivora melanogaster*). A close relationship between the White-fringed and Rusty-backed Antwrens was also found in a molecular study by Bates and colleagues. The sister-group to *Formicivora* remains uncertain, but results of various molecular studies suggest that the "grey antwren assemblage" is a candidate.

In recent years, the genus *Drymophila* has also received intense study. In a phylogenetic analysis based on mitochondrial DNA, J. M. Goerck found close relationships between three pairs of species: the Ferruginous (*Drymophila ferruginea*) and Bertoni's Antbirds (*Drymophila rubricollis*), the Rufous-tailed (*Drymophila*



*genei*) and the Ochre-rumped Antbirds (*Drymophila ochropyga*), and the Striated (*Drymophila devillei*) and the Long-tailed Antbirds (*Drymophila caudata*). The analysis also indicated a close relationship between the genera *Drymophila* and *Hypocnemis*, as discussed a few paragraphs below here. Nests of *Drymophila*, while not well known, appear to be a deep cup or bag, suspended from above.

*Terenura* concludes the sequence of taxa popularly known as "antwrens". The six species in the genus are similar in size and plumage. On the basis of morphology and vocalizations, however, they are generally recognized as forming three groups: the superspecies comprising the Streak-capped Antwren (*Terenura maculata*) and Orange-bellied Antwren (*Terenura sicki*) of eastern Brazil; the species group made up by the Rufous-rumped (*Terenura callinota*), Chestnut-shouldered (*Terenura humeralis*) and Yellow-rumped Antwrens (*Terenura sharpei*); and, finally, the Ash-winged Antwren (*Terenura spodioptila*). Because *Terenura* antwrens are small and typically occur from mid-heights up to the canopy, much remains to be learned of their distribution and systematics. Indeed, the nest architecture of the genus remains unclear, and its relationships to other groups uncertain.

The thamnophilid sequence continues with 33 antbirds and fire-eyes. These are placed in ten genera, the relationships among which generally remain unclear. Five of the six polytypic genera consist each of species which, according to morphology and behaviour, are closely related. The exception is the genus *Cercomacra*. J. W. Fitzpatrick and D. E. Willard placed ten of the twelve *Cercomacra* antbirds into two species groups, distinguished by female plumage and vocalizations, which they named the "tyrannina group" and the "nigricans group"; the remaining two, the Grey Antbird (*Cercomacra cinerascens*) and the Rio de Janeiro Antbird (*Cercomacra brasiliensis*), were considered intermediate or of uncertain relationship. Salient differences between the groups are emerging. Antbirds in the "tyrannina group" have been found to build deep pouch-nests (see Breeding), whereas species in the "nigricans group" construct cup-nests resembling those of *Thamnophilus* antshrikes and other species discussed above. Furthermore, characteristics of vocalizations,

especially in the forms of duetting (see Voice), while constant within each group, differ between the two. These data suggest that the morphological characters that were used to unite these antbirds in *Cercomacra* could be convergent, and that the genus may not be monophyletic.

A nest architecture that is almost unique among the Thamnophilidae supports a close relationship between the three fire-eyes in the genus *Pyriglena* and the antbirds of the monotypic *Rhopornis* and the polytypic *Myrmoborus*, although the nest description for the Slender Antbird (*Rhopornis ardesiacus*) remains to be confirmed. The domed nest, composed mainly of large dried leaves, palm leaves and twigs and placed on the ground, is often described as an "oven" (see Breeding). Species in these genera regularly pound the tail emphatically downwards and then slowly raise it in a relaxed manner to just above the horizontal, before pounding it down again. This behavioural evidence corroborates the conclusion of Ridgway, who used the morphological characters of bill length, dense feathering of the forehead and lores and absence of rectal bristles when placing *Pyriglena* and *Myrmoborus* sequentially in the taxonomic sequence.

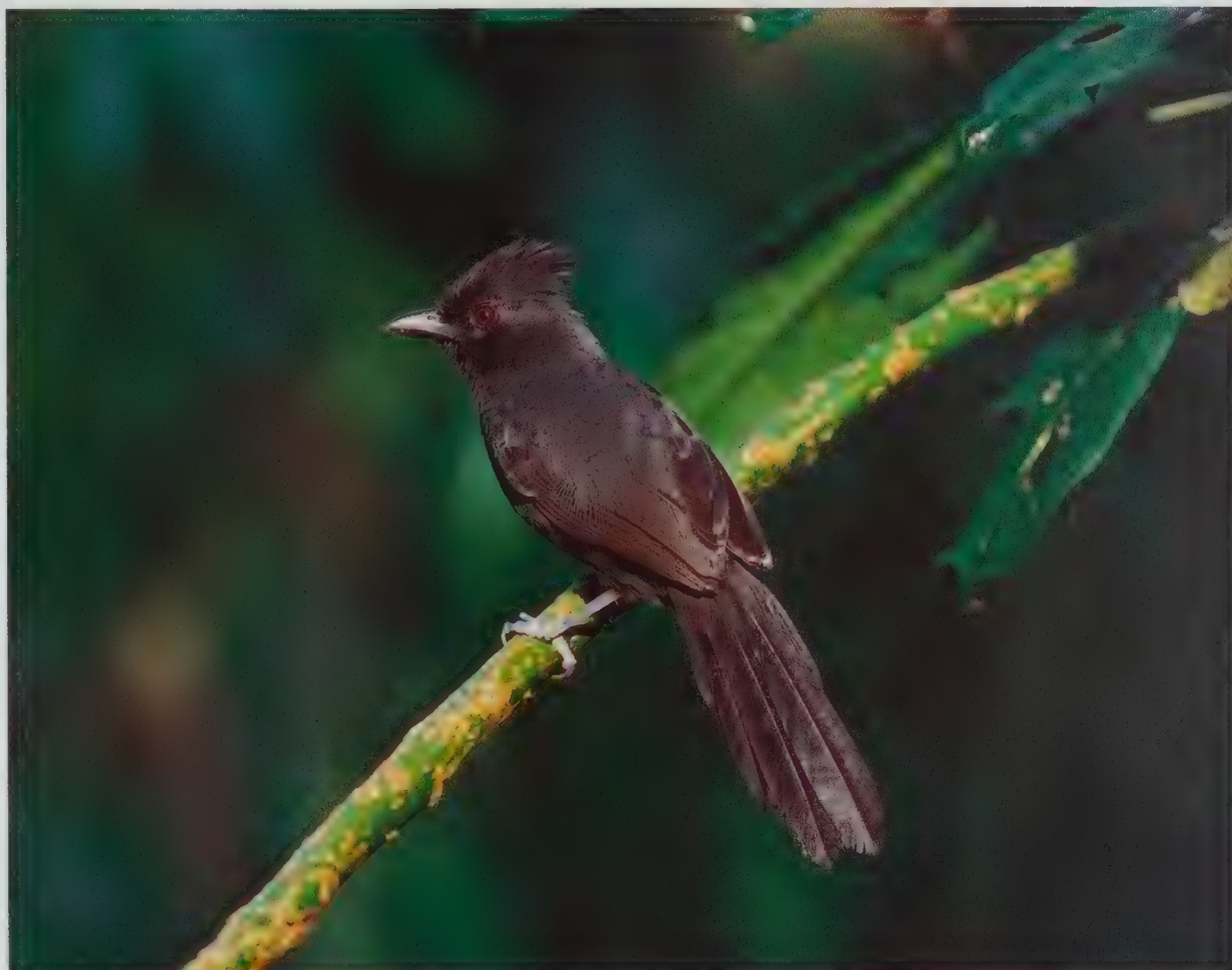
On the other hand, behavioural data suggest that it may have been a mistake to place the two *Hypocnemis* species immediately after *Myrmoborus*. *Hypocnemis* antbirds build suspended nests in the form of a pouch or deep cup, their tail motions are from side to side, and they flick their wings constantly. A recent analysis by Bates and colleagues, employing mitochondrial DNA, indicated that *Hypocnemis* antbirds were closely related to *Drymophila* antbirds, a relationship supported by similarity of nest architecture and of nearly all body motions, as well as by plumage pattern, although the suspended nests of *Drymophila* may not be so deep and the tail motions may vary somewhat among its species. As those authors also pointed out, genetic divergences among populations of the Warbling Antbird (*Hypocnemis cantator*) are substantial. The two species in the next genus, *Hypocnemoides*, may or may not be part of the same lineage as *Hypocnemis* and *Drymophila*. Although the suspended pouch is like most *Hypocnemis* nests, and continuous wing-flicking is also characteristic, the actions of *Hypocnemoides* antbirds differ in that the tail is held partially fanned and cocked at 10



In the traditional taxonomic sequence, the monotypic genus containing the **Spot-backed Antshrike** is placed directly after that of the Fasciated Antshrike (*Cymbilaimus lineatus*). Although there is no direct evidence that any true relationship between these species exists, their overall plumage pattern and bill morphology is similar. However, as the Spot-backed Antshrike appears to be an ecological replacement of the Fasciated Antshrike in the Atlantic Forest, their similarity might be due to convergent evolution. Both species are usually found foraging in tangles of vines in the mid-storey, where they presumably target the same types of invertebrate prey.

[*Hypoedaleus guttatus*,  
Fazenda Capricornio,  
Ubatuba, São Paulo,  
Brazil.  
Photo: Arthur Grosset]





The **Tufted Antshrike** belongs to another genus restricted to the Atlantic Forest region. The male of this species is entirely blackish, while the female is dark brown with paler bars. Both sexes possess elongated crown feathers, which are frequently raised into the crest that gives the species its English name. Although currently placed in the genus *Mackenziaena* with the Large-tailed Antshrike (*M. leachii*), the Tufted Antshrike possesses some vocal and plumage characters that suggest a closer relationship to the genus *Frederickena*, which is Amazonian/Guianan in distribution.

[*Mackenziaena severa*,  
Urugua-í Provincial Park,  
Misiones, Argentina.  
Photo: José & Adriana Caloj]

degrees above horizontal and is regularly flicked upwards to 30-45 degrees.

Three monotypic genera follow. The Black-and-white Antbird (*Myrmochanes hemileucus*) was thought by Hellmayr to be "nearly related" to *Hypocnemoides*, but evidence confirming this relationship does not yet exist. It is rather a mystery why the Bare-crowned Antbird (*Gymnocichla nudiceps*) was placed here; its large size, bright blue unfeathered ocular region (see Morphological Aspects) and tail-pounding behaviour, along with its domed nest supported by debris atop a broken-off palm, all point to a relationship with antbirds placed later in the sequence, especially *Myrmeciza* species. The Silvered Antbird (*Sclateria naevia*), having a long, thin bill, water-edge foraging habits and side-to-side tail motion, and with its nest unknown, is difficult to place; Hellmayr put it in the same genus as the Spot-winged Antbird (*Pernostola leucostigma*), but no information is available to support such a relationship, and the two species differ in their tail motions.

The final genus in this sixth section, *Pernostola*, seems rather clearly polyphyletic, as exemplified by tail actions. The Black-headed Antbird (*Pernostola rufifrons*) and the White-lined Antbird (*Pernostola lophotes*) pound the tail down and then slowly raise it, whereas the Spot-winged, Slate-coloured (*Pernostola schistacea*) and Caura Antbirds (*Pernostola caurensis*) flick the tail up and then lower it slowly. W. E. C. Todd proposed the shifting of those last three species into a newly erected genus, *Schistocichla*, not an unreasonable proposal and one which some recent authors have adopted, but it seems better to retain them within *Pernostola* pending peer-reviewed analysis of molecular and other characters. No stereotypical tail movements have yet been documented for the newly described Allpahuayo Antbird (*Pernostola arenarum*). The White-lined Antbird may be misplaced in this genus, but its foraging behaviour and tail movements accord with those of the Black-headed Antbird.

The genus *Myrmeciza*, here discussed as a separate section, has been thought by some to be polyphyletic, and Todd proposed placing its 20 species, together with the White-lined Antbird, into five genera. Any phylogenetic reconstruction and consequent taxonomic modifications should, however, consider the relationships of *Myrmeciza* species with antbirds of other genera that share phylogenetically relevant characters, especially *Myrmorchilus*, *Pyriglena*, *Rhopornis*, *Myrmoborus*, *Gymnocichla*, *Sclateria* and *Pernostola*. The diversity of behavioural characteristics within *Myrmeciza* suggests that some of its members are probably related more closely to species of these other groups than to one another. For example, nests are known for 13 *Myrmeciza* species, and all are supported atop substrates (see Breeding), but they vary in shape and location. Nests of the Scallop Antbird (*Myrmeciza ruficauda*), White-bibbed Antbird (*Myrmeciza loricata*), Squamate Antbird (*Myrmeciza squamosa*) and Goeldi's Antbird (*Myrmeciza goeldii*) are open cups placed on the ground. Three ground nests have also been documented for the Ferruginous-backed Antbird (*Myrmeciza ferruginea*), but one of them had a small overhanging cap of twigs and leaves, and this was an even better-developed feature of two ground nests of the Sooty Antbird (*Myrmeciza fortis*), each of which was a spherical chamber with a short entrance tunnel, resembling *Pyriglena* and *Myrmoborus* nests. Other recorded nest-sites were in debris or herbaceous vegetation just off the ground in the case of the Chestnut-backed (*Myrmeciza exsul*), Immaculate (*Myrmeciza immaculata*) and Black-throated Antbirds (*Myrmeciza atrothorax*); along tree trunks on palm rachides or spines or on epiphytic ferns for the Plumbeous Antbird (*Myrmeciza hyperythra*) and White-shouldered Antbird (*Myrmeciza melanocephala*); and in shrubby vegetation near the ground for the White-bellied Antbird (*Myrmeciza longipes*) and Dull-mantled Antbird (*Myrmeciza laemosticta*). The majority of *Myrmeciza* antbirds characteristically pound the tail downwards and then raise it slowly, but a variety of other tail movements has been noted





The genus *Sakesphorus* contains a group of six more or less crested antshrikes allied to the genus *Thamnophilus*. They are mostly inhabitants of drier woodland, gallery forest, flooded forest or scrub. The **Silvery-cheeked Antshrike**, for example, is an inhabitant of caatinga, a thorn-scrub formation in interior Brazil. Throughout the genus, males tend to be boldly marked with black, white or rufous, while the pattern of females is more subdued.

[*Sakesphorus cristatus*, Aracuaí, Mato Grosso, Brazil.  
Photo: Edson Endrigo]

for the Yapacana Antbird (*Myrmeciza disjuncta*), the Grey-bellied Antbird (*Myrmeciza pelzelni*) and the Southern Chestnut-tailed Antbird (*Myrmeciza hemimelaena*), as well as for the Ferruginous-backed, Scalloped, White-bibbed, Squamate and Black-throated Antbirds.

Elements of vocalizations also point to relationships. For example, loudsongs consisting of series of doublets are given by the Ferruginous-backed, Scalloped, White-bibbed and Squamate Antbirds, a fact which, along with plumage similarities, suggests that these four form a closely related group. The loudsongs of the White-shouldered and Goeldi's Antbirds are similar, and the two species are considered to constitute a superspecies, although apparent differences between them in nest architecture require further study. These last two species are of large stature, and similar proportions are found in the Plumbeous, Sooty and Immaculate Antbirds. All five species have been considered related because of their large size and similarly plumaged black males, most with bare blue orbital patches, these being minimal and grey on Goeldi's Antbird, but monophyly of the group has not been demonstrated satisfactorily. The Dull-mantled Antbird and the Esmeraldas Antbird (*Myrmeciza nigricauda*) represent a superspecies, and together with the Stub-tailed Antbird (*Myrmeciza herlepsi*) appear to form a species group. Interestingly, the male of the Esmeraldas Antbird was until recently thought to be of a different species from the female and was even placed in a separate genus, as "*Sipia rosenbergi*", with the Stub-tailed Antbird its sole congener. If future studies show that *Myrmeciza* is polyphyletic, the resurrection of *Sipia* may be warranted.

Most of the remaining 20 species in the sequence, making up the eighth and final section of the Thamnophilidae, are obligate or near-obligate ant-followers. Exceptions are the Wing-banded Antbird (*Myrmornis torquata*) and three of the four species in the genus *Hylophylax*. The Spotted Antbird (*Hylophylax naevioides*), the Spot-backed Antbird (*Hylophylax naevius*) and the Dot-backed Antbird (*Hylophylax punctulatus*), as their names reflect, share similar plumage features; in addition, they all flick the tail up sharply, although shallowly, and drop it more slowly. These three and the Wing-banded Antbird do not appear to be closely related to the obligate ant-followers. Of the four, three have been found to construct suspended

cup-nests like those of the similarly plumaged Banded Antbird and of other species that are placed early in the taxonomic sequence, and unlike nests of remaining species in this final segment of the sequence. The nest of the Dot-backed Antbird is unknown.

The fourth *Hylophylax* species, the Scale-backed Antbird (*Hylophylax poecilinotus*), shares a number of behavioural attributes with members of the obligate ant-following assemblage in the genera *Pithys*, *Gymnopathys*, *Rhegmatorhina*, *Skutchia*, *Phlegopsis* and *Phaenostictus*. The nest of the Scale-backed Antbird and all known nests of the ant-followers are supported from below, rather than being suspended, and are generally placed in hollow stumps, making this the only group of thamnophilids regularly to use such nest-sites. Occasionally, however, some of these antbirds locate the nest elsewhere, including along a palm trunk in leaf sheaves, on the ground or sunk in bundles of sedge, or in the cavity of a live tree. With the exception of the Ocellated Antbird (*Phaenostictus mcleannani*), all of these species lower the tail slowly and then jerk it up rapidly to slightly above the horizontal. Otherwise, the Ocellated Antbird and the Black-spotted Bare-eye (*Phlegopsis nigromaculata*) appear to exhibit long-term relationships between parents and offspring which are perhaps unique within the family (see Breeding).

Aside from the Scale-backed and Ocellated Antbirds, members of the assemblage appear to fall into well-defined groups. Using molecular data, Hackett demonstrated the likelihood of monophyly in *Gymnopathys* antbirds, which she found to consist of two species pairs: the Bicoloured Antbird (*Gymnopathys leucaspis*) and the Rufous-throated Antbird (*Gymnopathys rufigula*) were each other's closest relatives, as were the White-throated Antbird (*Gymnopathys salvini*) and the Lunulated Antbird (*Gymnopathys lunulatus*). Similarities in vocalizations and behaviour support the continued consideration of the five *Rhegmatorhina* antbirds as a clade, while the three species in *Skutchia* and *Phlegopsis* are also probably closely related. More work is needed to define the relationship between the White-plumed Antbird (*Pithys albifrons*) and the very recently rediscovered White-masked Antbird (*Pithys castaneus*), although the latter has been confirmed to be an obligate ant-follower and the loudsongs of the two are similar in qualities.





Looking at the family as a whole, substantial behavioural and vocal differences exist among populations within many species. This is particularly so with a number of thamnophilids inhabiting Amazonia, and these, as Bates has shown, also exhibit a high level of genetic differentiation, which can reasonably be attributed to a combination of the antbirds' sedentary nature and a long history in much of their present locations. Typically, such inter-population differences are reflected less in morphology than in behaviour and vocalizations (see Voice). Isler and colleagues developed a yardstick, based on vocal differences between syntopic congeners with similar morphology, for the objective use of vocalizations as a means of defining species limits. Through this and other methodologies, species-level distinctions are now being found among allopatric populations, and cryptic sympatric

species are coming to light. Since 1990, altogether 19 new thamnophilid species have been recognized: nine of these were previously undescribed, and ten were raised from subspecies or synonymized taxa. Much more work of this nature is needed. Not only is a careful re-examination of species limits in antbirds required in order to provide the basic building blocks for studies of phylogeny and biogeography, but soundly based species definitions are essential to the determining of regions of endemism and land-conservation strategies that will ensure that the wonders of antbird natural history are preserved.

### Morphological Aspects

Antbirds are a morphologically diverse family, ranging in size from the tiny Pygmy Antwren (*Myrmotherula brachyura*), 7.5-8 cm in length and weighing a mere 6-8 g, to the Giant Antshrike, which, with the nominate race at 30-34 cm and 148-155 g, resembles a large cuckoo (Cuculidae) more than it does an antbird.

Structural characters that define the family are either internal, including construction of the syrinx and shape of the sternum, or external but not easily recognized by the non-specialist, such as scutellation of the tarsi, connection of the toes, and details of structure of the upper portion of the bill, or maxilla. With 209 species and such a spectrum of different sizes, other, more obvious aspects of thamnophilid morphology are difficult to summarize. This is reflected in the English names given to various genera and groupings of antbirds by early authors. Names such as "antwren", "antshrike" and "antvireo" reflect superficial similarities in size, shape or bill morphology of the member taxa to those of more familiar groups of Northern Hemisphere birds. Thus, antwrens are small and lively like wrens (Troglodytidae); antvireos are somewhat stockier and bigger-billed, and are generally more phlegmatic, like vireos (Vireonidae); and antshrikes, with their strong, distinctly hooked bills, are reminiscent of true shrikes (Laniidae).

In general, most antbirds have relatively short, elliptical wings, adapted for manoeuvrability in the densely vegetated habitats which they occupy (see Habitat). This is especially evident in two terrestrial species, the Banded Antbird and the Wing-banded Antbird, each of which has exceptionally broad, rounded wings

The genus *Thamnophilus*, the second most species-rich in the antbird family, can be subdivided into a few discrete species groups and species pairs.

Best known amongst these is the "*Thamnophilus doliatus* complex", named after and centred around the common and widespread Barred Antshrike. All members of this complex, such as the

**Chestnut-backed Antshrike**, tend to inhabit tangled undergrowth or secondary habitats, and have heavily barred plumage in at least one sex; they also share similar loudsongs. With its dull, unbarred plumage and more arboreal habits,

the **Mouse-coloured Antshrike** does not belong in the "*T. doliatus* group". Instead, it forms a species pair with the closely related Plain-winged Antshrike (*T. schistaceus*).

These two species are comparatively plain, prefer to forage with mixed-species flocks in the mid-storey of tall humid forest, and have much slower loudsongs than members of the "*T. doliatus* complex".

[Above: *Thamnophilus palliatus vestitus*, Governador Valadares, Minas Gerais, Brazil. Photo: Edson Endrigo.

Below: *Thamnophilus murinus canipennis*, Taisha, Morona-Santiago, Ecuador. Photo: Doug Wechsler/VIREO]





Immediately after *Thamnophilus* in the antbird sequence comes a miscellany of species with obscure ancestries. The first of these, the **Spot-winged Antshrike**, is almost certainly misplaced as it is genetically distant from *Thamnophilus* according to molecular analysis, and possibly more closely related to *Myrmotherula* antwrens of the "stipple-throated group". With foraging behaviour and vocalizations that are unique in the family, this species' relationships remain a mystery.

[*Pygiptila stellaris stellaris*, Cristalino Jungle Lodge, Alta Floresta, Mato Grosso, Brazil. Photo: Edson Endrigo]

for its size. With regard to flight, evolution has emphasized control and high lift efficiency over speed in the *Thamnophilidae*. Broad, rounded wings are "slotted" at the tips, further increasing lift for fast take-off, and are found in a number of birds that sally-glean insects from vegetation. The direct flight of most antbird species is typically somewhat slow and fluttering. It is somewhat faster and more darting in the aerial-hawking genus *Thamnomanes*, which has the same basic wing design as most antbirds but is relatively longer-winged, and in some of the obligate ant-following genera such as *Pithys* and *Gymnophithys* (see Food and Feeding).

Most antbirds possess proportionately large, strong feet and legs, and many have modifications of the toes and soles of the feet that facilitate gripping. These structural adaptations are particularly pronounced in species that cling laterally to the vertical stems and saplings so common in the understorey of tropical forests, and are perhaps best developed in ant-following species in the genera *Pithys*, *Gymnophithys*, *Rhegmatorhina*, *Phlegopsis*, *Phaenostictus* and *Skutchia*. These ant-followers are able to outcompete other birds at ant swarms, largely through their ability to monopolize choice positions close to the most active parts of the swarm. Strong legs and feet allow these birds to cling for long periods to vertical stems, to jump from perch to perch, and to make rapid and acrobatic adjustments to the escape manoeuvres of prey. Less adapted species not only are less manoeuvrable, but also are dependent on more horizontal perches, which are generally less common near the ground and therefore vertically more distant from the swarm front. Leg muscles are said to account for more than 13% of the body weight of one obligate ant-follower, the Bicoloured Antbird. This species and its relatives have the outer two toes of each foot fused at the base, which, along with the partial fusion between the base of toe II and the hind toe, serves to form a broad, flexible sole. This sole is covered by minute projections, which are smooth when the toes are extended, but rough and gripping when the toes are flexed. Antbirds which spend much time in clinging to perches and then flying from perch to perch, as do obligate followers of army ants, tend to have relatively longer claws than those species which spend more time hopping along branches or other substrates. Long legs are useful in allowing constantly moving, perch-gleaning

species, the majority of *thamnophilids*, to reach more foraging substrates from a single perch. In contrast, antshrikes of the genus *Thamnomanes* perch upright for relatively long periods, and then sally to hawk insects from the air or from vegetation. Their relatively shorter legs provide a lower centre of gravity that enhances balance and stability when scanning, at the expense of greater manoeuvrability.

Antbirds in general have a proportionately large bill. That of many of the antshrikes, particularly *Cymbilaimus*, *Frederickena*, *Batara*, *Taraba* and most *Thamnophilus* species, is strongly hooked. One of the longest antshrikes, the Large-tailed Antshrike (*Mackenziaena leachii*), is, however, relatively small-billed, and the bill of yet another large species, the White-bearded Antshrike, is not noticeably hooked. In all antbirds, the maxilla has a subterminal tomial notch, or "tooth", an adaptation that aids in the holding and crushing of chitinous arthropod prey. In larger species, the bill is strong enough to seize and macerate small vertebrates. Unique within the family is the chisel-like, upturned bill of the three species of bushbird, which are divided into two genera, *Neotantes* and *Clytoctantes*, partly on the basis of differences in the bill morphology. The upturned, chisel shape is more exaggerated in the two species of *Clytoctantes*, which have the subterminal tomial notch displaced significantly above the horizontal.

The shape and size of the tail vary widely within the family, and differences have often been used to define genera. Many *Myrmotherula* antwrens have a notably short tail, that of the Pygmy Antwren and Moustached Antwren (*Myrmotherula ignota*) appearing nearly non-existent. Others with a particularly short tail include the Spot-winged Antshrike, the Banded, Wing-banded and Black-and-white Antbirds, and some members of the genus *Hylophylax*. In contrast, the tail of *Drymophila*, *Cercomacra*, *Rhopornis* and *Pyriglena* species is proportionately long and graduated. The Giant Antshrike and the Large-tailed Antshrike have an outsized tail that is proportionately both long and broad.

Antbirds have notably soft plumage, particularly on the back, rump and flanks. The flank feathers of a few species, such as the White-flanked Antwren and males of most *Formicivora* antwrens, are long and silky, and are white or pale grey, contrasting with mostly black body feathers. White-flanked Antwrens of both sexes



display the flanks by constantly flicking the wings, revealing the flanks as a white flash with each flick. Many more antbirds have a contrasting, typically bright white, "interscapular patch" in the centre of the back, this being comprised of all-white feathers or white bases of dark feathers; in a small minority of species, the patch is buff, rufous or grey. Such interscapular patches are normally concealed by dark overlying back feathers and/or dark feather tips. In agonistic display, the overlying feathers are parted to reveal the boldly contrasting patch, which is usually fluffed upwards and flared laterally, such that it may cover the entire back in a number of species. Set against the dim backdrop of the forest interior, the visual effect of a suddenly flared, bright white interscapular patch is striking. In some species, only one sex, usually the male, has such a patch, whereas it is present on both sexes of other species. In a very few cases, the interscapular patch varies in colour between the sexes. Examples include the Dusky-tailed Antbird (*Drymophila malura*) and the Fringe-backed Fire-eye (*Pyriglena atra*), the males of which have a white patch and the females a grey one, and the Rufous-throated Antbird, in which males have a white patch and females a cinnamon-rufous patch. The interscapular patch on some species, such as the male Fringe-backed Fire-eye, is so large that parts of it are visible even when the bird is not displaying or aroused.

Instead of an interscapular patch, other antbirds, such as the Plain Antvireo and the White-shouldered Antbird, have an area of white feathers hidden beneath the scapulars that form a different-shaped patch. This is exposed in agonistic encounters in the same way as other antbirds reveal their interscapular patches. Still other thamnophilids, such as the Immaculate Antbird, have white innermost lesser wing-coverts which are normally concealed by the scapulars and breast feathers; in such cases, a visible line at the bend of the wing is also white. Some species combine different types of patches. The Dot-winged Antwren and some *Cercomacra* species, such as the Jet Antbird (*Cercomacra nigricans*), have both a white interscapular patch and hidden white patches under the scapulars. Members of the genus *Terenura* have

rufous patches on the rump and lower back, although this region is bright yellow on one of them, the aptly named Yellow-rumped Antwren. In agonistic display, males elevate and flare these feathers to such an exaggerated degree that the head is nearly concealed, and the bird resembles a rufous puffball.

Many thamnophilids have elongated crown feathers that can be erected into a bushy or spiky crest. This character is most common among the antshrikes and in some of the obligate and regular ant-following species. Both sexes of the Undulated Antshrike, the Tufted Antshrike (*Mackenziaena severa*), the Glossy Antshrike (*Sakesphorus luctuosus*) and the Black-crested Antshrike (*Sakesphorus canadensis*) have a particularly long, spiky crest that is extremely expressive. Other members of the genera *Frederickena* and *Sakesphorus*, along with *Cymbilaimus* and the Giant, Great and White-bearded Antshrikes, have a somewhat shorter, bushier crest, as do several members of the genus *Thamnophilus*, the latter primarily of the "barred group". The White-lined Antbird has a particularly spiky crest, whereas that of the Black-headed and Sooty Antbirds is shorter and is usually apparent only when the birds are alarmed or during agonistic encounters. All members of the obligate ant-following genus *Rhegmatorhina* have long crown feathers that are typically depressed, forming a noticeable, but lax, crest. During the frequent skirmishes that occur when birds are competing over army-ant swarms, and during territorial or other agonistic encounters, *Rhegmatorhina* antbirds routinely erect their pointed crown feathers into a spiky crest. The sole exception is the Hairy-crested Antbird (*Rhegmatorhina melanosticta*), the crown feathers of which are shorter, filamentous and peculiarly hair-like, and, when erected, form a bushy crest rather than a pointed one. The most conspicuously and perpetually crested of all the thamnophilids is the bizarre little White-plumed Antbird, the tall, white crest of which is nearly always at attention, and is sometimes parted in a bifurcate manner suggestive of some tyrant-flycatchers (Tyrannidae) of the genus *Elaenia*. The White-plumed Antbird's crest is made all the more conspicuous by white plumes on the

The bushbirds inhabit humid forest understorey, where they are usually reclusive and very difficult to see; indeed, those in the genus *Clytactantes* are almost unknown, one having gone unreported since 1965 in Venezuela, the other since 1986 in western Brazil. All three species possess distinctively upcurved lower mandibles. This chisel-shaped design is clearly an adaptation for foraging. The **Black Bushbird** (a female pictured here) spends much of its time hammering at branches, woody vines, palm rachides or rotten logs. When it has opened up an aperture, it pries loose strips of bark or stem fibres, and levers them off using its bill, thereby gaining access to subsurface invertebrate prey.

[*Neotantes niger*,  
Santiago Comaina  
Reserved Zone,  
Loreto, Peru.  
Photo: José Álvarez  
Alonso]







According to genetic studies, the *Dysithamnus antvireos* belong on the same branch of the family tree as the *Thamnophilus*. They differ in being smaller, with finer bills and different vocalizations. They tend to forage from the undergrowth to the subcanopy of tall forests, generally accompanying mixed-species flocks of insectivores. The **Spot-crowned Antvireo** occurs in the humid forests of southern Central America, and the Chocó region of west Colombia and Ecuador.

[*Dysithamnus puncticeps*, Tinalandia, Ecuador. Photo: J. S. Dunning/VIREO]

chin that form a "beard" on each side. When viewed head-on, the laterally splayed beard and the tall crest create a striking white arrowhead shape against an otherwise black face.

Aside from the above examples, the presence of ornamental plumes of any kind is rare among the *Thamnophilidae*. The poorly known Pale-faced Antbird (*Skutchia borbae*) has a small patch of stiffened black feathers above each eye, and a much larger conspicuous patch of whitish feathers occupying the loreal region. This loreal patch is reminiscent of similar patches of elongate feathering found on some species of puffbird (*Bucconidae*) of the genus *Malacoptila*. The monotypic genus *Xenornis*, the single species of which, the Speckled Antshrike, has been known by various English names, including "Spiny-faced Antshrike", is in part characterized by well-developed but short black bristles in the loreal area, below the eye, around the gape and on the chin. This bird forages primarily by darting sallies to live foliage, which frequently involves forceful contact between the head and the vegetation; the concentration of stiff bristles around the eye may serve to protect it during these violent strikes. Two species of *Thamnomanes*, the Cinereous and the Bluish-slate Antshrikes, both of which are also sally foragers, have bristle-like feathers on the lores, along the edge of the maxilla and in the gular region. These are well developed, and resemble the rictal bristles of tyrant-flycatchers, but with the rachis less stiffened and the distal barbs more fully developed. The function of rictal bristles has never been clearly determined, but one of the more plausible theories is that these stiffened feathers act to deflect flying insects away from the eyes of aerial feeders. Interestingly, the two remaining species of *Thamnomanes* lack bristles, although they have semi-bristles, a feather type intermediate between true bristles and contour feathers, distributed in the areas where bristles are present on the Cinereous and Bluish-slate Antshrikes.

A number of antbirds have prominent areas of contrastingly coloured bare skin on the face, particularly around the eyes. On some species, this skin may appear, under normal conditions, as little more than a well-developed eyering, but it is highly flexible and can be enlarged by retraction of adjacent feathers, so that birds in alarmed or agonistic modes may present a striking, big-eyed appearance. This is particularly prominent among the regu-

lar and obligate followers of army ants. All members of the genus *Rhegmatorhina* have prominent periorbital patches, giving them a distinctive goggle-eyed look. The patch is pale bluish-white on the Chestnut-crested Antbird (*Rhegmatorhina cristata*) and the Hairy-crested Antbird, greenish-yellow on the White-breasted Antbird (*Rhegmatorhina hoffmannsi*), and bluish-green or glaucous green on the Bare-eyed Antbird (*Rhegmatorhina gymnops*) and the Harlequin Antbird (*Rhegmatorhina berlepschi*). The periorbital patch is particularly large on the Bare-eyed Antbird, which, as Willis pointed out, is especially prone to swinging around perches and staring at the observer in a way that shows off both eye-patches simultaneously. Willis speculated that the pale "goggles" of *Rhegmatorhina* antbirds, surrounding, as they do, a dark eye, may function as the "iris" in an eyespot design, scaring away potential predators or frightening competitors of the same or other species (see General Habits). Similar but somewhat smaller bluish bare patches surround the eyes of the Rufous-throated and Bicoloured Antbirds, although not those of their congeners the White-throated and Lunulated Antbirds, and are present also on the Sooty, Immaculate, Plumbeous, Chestnut-backed and Ferruginous-backed Antbirds, being bright blue on the last of those species. Smaller still are the bare bluish areas of skin around the eyes of the White-shouldered, White-bellied and Wing-banded Antbirds, whereas the bright blue skin surrounding the eye of the Ocellated Antbird extends to much of the face, and is more striking and extensive than on even the *Rhegmatorhina* species. The two bare-eyes, in the genus *Phlegopsis*, resemble *Rhegmatorhina* in having extensive bare goggles, but the skin is bright red. The red goggle is equally well developed in both sexes of the Black-spotted Bare-eye, but is reduced to a narrow, teardrop-shaped eyering on the female Reddish-winged Bare-eye (*Phlegopsis erythroptera*). The Pale-faced Antbird, formerly placed in the same genus as the two bare-eyes, has only a small triangle of greyish-white skin behind the eye. The ultimate expression of these tendencies towards brightly coloured, bare facial skin is to be found in the monotypic genus *Gymnocichla*, the Bare-crowned Antbird, which is distinguished by the male having the entire forecrown, the periorbital region and much of the face naked and bright blue. The female, on the other hand,



has only the orbital region bare and blue, suggesting that this species, rather than constituting a distinct genus, may merely represent one end of the range of character variation seen in the genus *Myrmeciza*.

While most antbirds have dark eyes, there are numerous exceptions. A number of species have reddish-brown eyes that appear brighter red in the sunlight, but dark brown in the shade. Vivid red eyes are found in the Fasciated Antshrike (*Cymbilaimus lineatus*), the Great and Black-throated Antshrikes, all of the fire-eyes, the Slender Antbird, the Ash-breasted (*Myrmoborus lugubris*), Black-faced (*Myrmoborus myotherinus*) and Black-tailed Antbirds (*Myrmoborus melanurus*), the Esmeraldas, Dull-mantled and Goeldi's Antbirds, and in two races of the Black-headed Antbird. Those of the Rufous-capped and Rufous-winged Antshrikes and the Stub-tailed Antbird are somewhat duller reddish, while the eye colour of Undulated Antshrikes varies from brown to pale orange and pale yellow. Four *Thamnophilus* species, the Barred, Lined (*Thamnophilus tenuipunctatus*), Bar-crested (*Thamnophilus multistriatus*) and Chestnut-backed Antshrikes (*Thamnophilus palliatus*), have glaring yellow or straw-yellow eyes, although eye colour of the Barred Antshrike varies racially, with the north-east Brazilian subspecies *capistratus* having chestnut-brown eyes; the colour also varies within some Barred Antshrike populations. The pale grey eyes of the Pearly Antshrike give it a unique facial expression. Grey eyes are found also in the Uniform and Speckled Antshrikes, the Black-chinned (*Hypocnemoides melanopogon*) and Band-tailed Antbirds (*Hypocnemoides maculicauda*), the Slate-coloured Antbird, two races of the Black-headed Antbird, and the Spot-backed Antbird. Iris colour of several antwrens of the "stipple-throated group", including the White-eyed Antwren (*Myrmotherula leucophthalma*), Brown-bellied Antwren, Checker-throated Antwren (*Myrmotherula fulviventris*), Stipple-throated Antwren (*Myrmotherula haematonota*) and Foothill Antwren (*Myrmotherula spodionota*), varies from whitish to pale grey, to pale orange, and to hazel-brown. Some of this variation has been shown to be age-related, but the extent of sexual and individual variation is not well understood. Observers attempting to determine the eye colour of forest birds need to exercise caution. In the gloom of the forest interior, birds' pupils often dilate to the extent that a pale iris may be exceedingly difficult to detect.

Apart from the bare facial skin and eye colour, antbirds show little variation in bare-part coloration when compared with that found in other avian families. Bill and tarsus colours range from grey to blue-grey to blackish in most species. Paleness of bill colour is a distinguishing character in a few closely related pairs. Several species have pinkish legs and feet, including the Silvered Antbird, some races of the Spot-winged Antbird, and the White-bellied, Squamate, White-bibbed, Scalloped, Spot-backed, Rufous-throated and Ocellated Antbirds. The legs and feet of White-plumed Antbirds are bright orange-yellow.

Antbirds are not brightly coloured. Nonetheless, many are attractively patterned in black and white or various tones of rufous, chestnut, buff or brown. Several, such as the Giant and Large-tailed Antshrikes, the Yellow-browed Antbird (*Hypocnemis hypoxantha*), the Ferruginous-backed, White-plumed and Ocellated Antbirds and the Reddish-winged Bare-eye, are truly striking and, arguably, are among the most attractive of Neotropical birds. Sexual dimorphism is the rule rather than the exception in the Thamnophilidae, and plumage differences between males and females of the same species are often pronounced. In general, males tend towards combinations of grey, black and white, whereas females tend towards brown, rufous and buff. Many species have patterns of bars or spots on the upperwing-coverts, these often being white tips or fringes of black or grey feathers on males, whereas females tend to have golden, buff or rufous tips or fringes of brown feathers. Males of many species have a black throat or bib, which is usually lacking on the females. Males of many thamnophilids are uniformly grey or black on the upperbody and underbody, while females of the same species are more often bicoloured, being darker or duller brown above and whitish, buffy or rufescent below. In some species the males, too, are brown-backed, but they have grey underparts.

An important tendency within the family is for females to exhibit a greater degree of geographical plumage variation than males. There are numerous antbird species in which female characters differ more than do those of males, these being, as Hellmayr pointed out, examples of "heterogynism". A few instances will suffice here. Male Dot-winged Antwrens are fairly similar throughout the species' broad geographical range, differing primarily only in the amount of white in the rectrices. The females, however, differ diagnosably, and in some cases strikingly, among the ten subspecies. Females of most races are slate-grey to sooty blackish above, and variably cinnamon, rufous or chestnut below, some races having grey flanks; as with males, they differ also in the amount of white tipping on the rectrices. Females of the nominate race differ further in having a black throat with rufous-chestnut breast and belly, whereas females of the race *nigriventris* have a black throat, a deep chestnut breast and a black belly and crissum, and those of the race *emiliae* have the throat and breast a deep chestnut and the belly black. For the most part, White-fringed Antwren males throughout their broad range differ only in darkness, the race *orenocensis* being the exception in having reddish yellow-brown upperparts. In contrast, females of the various subspecies vary strikingly in the colour and pattern of the underparts, some races being whitish with a cinnamon or buff tinge, one race orange-rufous, others being whitish with dusky or black streaking on the breast, and one race having white underparts with heavy black streaking throughout. Even more striking variation is evident among White-backed Fire-eye (*Pyriglena leuconota*) females. Those of the nominate race are dark rufescent brown above, with brownish-grey auriculars, and have the throat and breast pale buff and the lower underparts dark yellowish-brown. Females of the races *marcapatensis*, *hellmayri* and *maura* are similar to the nominate race, though yellower above, and, more noticeably, have a white eyebrow and



Amongst the most conspicuous features of the Amazonian avifauna are the mixed-species understory flocks.

These flocks are largely composed of antbirds, and usually led by one or two species of Thamnomanes antshrike, such as the Dusky-throated Antshrike.

These antshrikes are usually rather noisy and excitable, adopting an upright stance on open perches in the lower or middle storey, and sally-gleaning insects from foliage. Genetic analysis indicates that they are not closely related to Thamnophilus species.

[*Thamnomanes ardesiacus ardesiacus*, Zancudo Cocha, Napo, Ecuador. Photo: Doug Wechsler/VIREO]





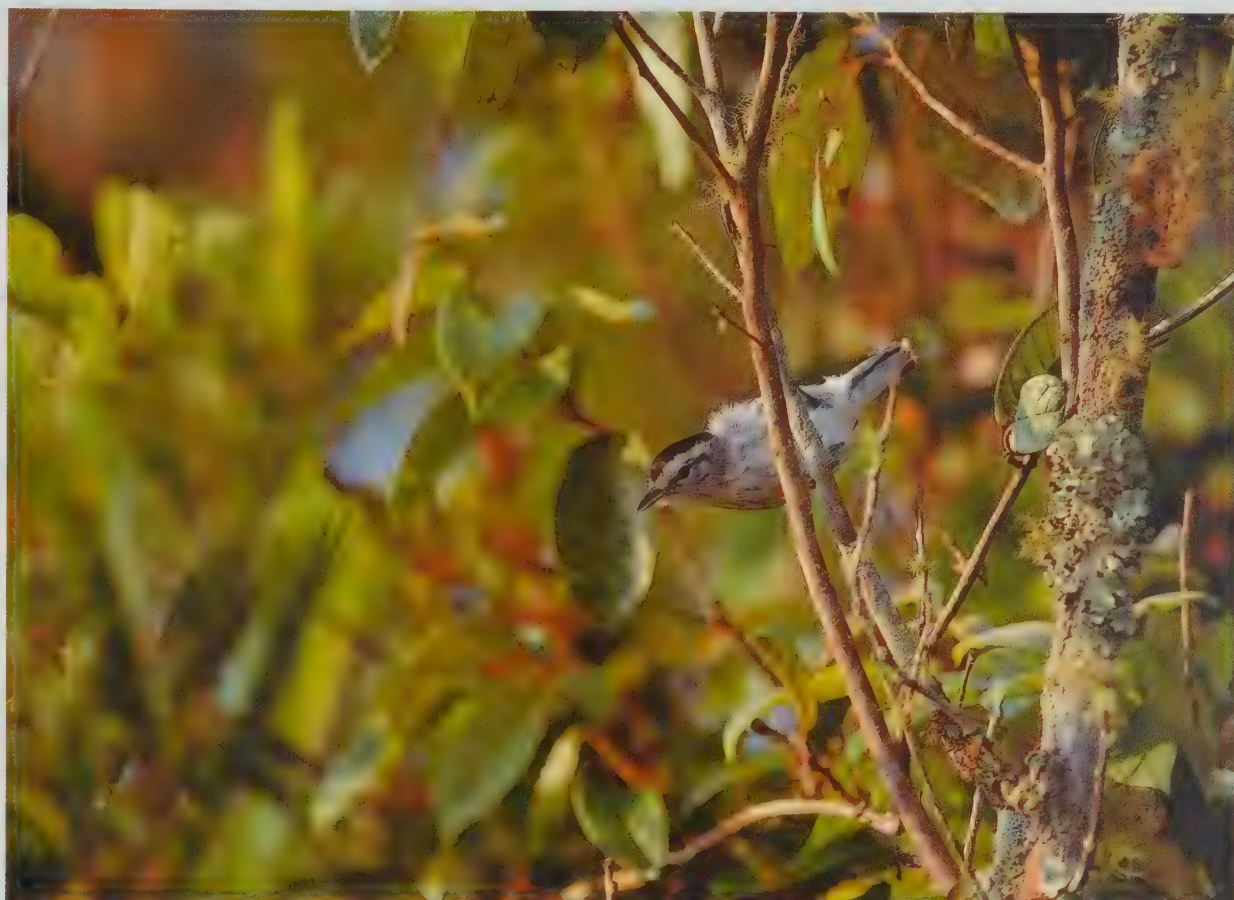
Containing 35 species, *Myrmotherula* is the most diverse genus in *Thamnophilidae*. It embraces an assortment of diminutive antwrens with thin warbler-like bills. It is probably polyphyletic, as these birds can be grouped into three distinct lineages: the "streaked", the "stipple-throated" and the "grey" assemblages. Members of the first group, including the **Pacific Antwren**, are noted for their striking plumage and distinctive nest structure. Despite its unmarked throat, the **Rufous-tailed Antwren** belongs in the "stipple-throated antwren" clade. Members of this group have a distinctive foraging technique which consists of probing for insects in hanging clusters of dead-leaves, and they also differ from other *Myrmotherula* species in their plainer, browner plumage, their nest architecture, their vocalizations and their territorial displays; in addition, they tend to have pale eyes. In fact, they are probably rather distantly related to their congeners. The **Star-throated Antwren**, an Atlantic Forest endemic, is sometimes included as an outlier of this group on the grounds that it has a stippled throat; however, its nest architecture is different, its loudsong is unusual, and it is not a dead-leaf specialist, as are all other members of the "stipple-throated assemblage". It may, in fact, be most closely related to the **Rufous-bellied** (*M. guttata*) and **Plain-throated Antwrens** (*M. hauxwelli*), an aberrant species pair which may form a separate clade from the "grey" assemblage.

[Top: *Myrmotherula pacifica*, Valle, Colombia. Photo: J. S. Dunning/ARDEA.

Centre: *Myrmotherula erythrura*, Taisha, Morona-Santiago, Ecuador. Photo: Doug Wechsler/VIREO.

Bottom: *Myrmotherula gularis*, Cantareira, São Paulo, Brazil. Photo: Edson Endrigo]





*Herpsilochmus antwrens* are larger and more robust than other canopy-dwelling antwrens, such as those of the genus *Terenura* and the few canopy-inhabiting species of *Myrmotherula*. In shape and foraging behaviour they are vaguely reminiscent of some warblers, notably *Dendroica* of the New World or *Sylvia* of the Old World. Most of them, including the **Large-billed Antwren**, have dark or well-streaked caps bordered by paler supercilia. This species tends to inhabit gallery forests and the edge of dry forest in interior Brazil and adjacent Bolivia. The genus as a whole is fairly evenly split between humid-forest species and those of drier formations.

[*Herpsilochmus longirostris*,

Das Emas National Park,  
Goiás, Brazil.

Photo: Luiz Claudio Marigo]

subocular spot; females of *pacifica* are dark reddish yellow-brown above and greyish olive-brown below; female *castanoptera* is chestnut-brown on the back, but the head and underparts are dull blackish, whereas *picea* is dark reddish yellow-brown except for a brownish-black head; and females of the race *similis* are rich rufous-brown all over, with a contrasting blackish head. Males of these various subspecies of the White-backed Fire-eye are nearly indistinguishable in plumage.

The importance of heterogynism in antbird morphology can also be seen when comparing closely related species within the same genus. In many species complexes, the males vary from being nearly inseparable by plumage characters to representing only minor variations on a common theme, whereas females of these same species differ more strikingly. Examples include the “*nigricans* group” in the genus *Cercomacra*, in which males of the Rio Branco Antbird (*Cercomacra carbonaria*), Jet Antbird, Bananal Antbird (*Cercomacra ferdinandi*), Manu Antbird (*Cercomacra manu*) and Mato Grosso Antbird (*Cercomacra melanaria*) are all extremely similar to one another morphologically, while their respective females are all readily distinguished. The same is true of species pairs of *Thamnomanes* antshrikes, and applies also to the Plumbeous and White-streaked Antwrens, the White-fringed and Black-bellied Antwrens, the Amazonian Streaked (*Myrmotherula multistriata*) and Guianan Streaked Antwrens (*Myrmotherula surinamensis*), members of the genus *Herpsilochmus*, and the White-shouldered and Goeldi’s Antbirds. In a rare exception to the general rule, females of the Lined and Chestnut-backed Antshrikes are very similar to one another, but males of the former species are barred black and white throughout, whereas males of the latter have a solidly black crown and bright rufous-brown upperparts.

Not all antbirds exhibit strong sexual dimorphism. This holds especially for obligate ant-followers. Sexes of the Pale-faced, Ocellated, White-plumed and White-masked Antbirds and of the Black-spotted Bare-eye are essentially monochromatic, but, interestingly, three other members of the assemblage, the Lunulated and White-throated Antbirds and the Reddish-winged Bare-eye, are strongly sexually dimorphic. The sexes of the Rufous-throated

Antbird are distinguished mainly by having differently coloured interscapular patches; and, although Bicoloured Antbirds west of the Andes are essentially monomorphic, females east of the Andes have a cinnamon interscapular patch, lacking on males. Other examples of species or genera that show only slight dimorphism between the sexes are the Spot-backed Antshrike (*Hypodaleus guttatus*), the Glossy and Streak-backed Antshrikes (*Thamnophilus insignis*), in which the sexes differ mainly in crown colour, the Russet Antshrike, differing sexually only in presence or absence of an interscapular patch, Castelnau’s Antshrike, the “streaked antwren assemblage” of *Myrmotherula*, the genus *Drymophila*, and the Banded, Black-and-white, Grey-headed (*Myrmeciza griseiceps*), Chestnut-backed and Dull-mantled Antbirds.

There are some interesting plumage parallels between thamnophilid species that are not closely related. Both sexes of the Cocha Antshrike, a poorly known bird restricted to the lowlands of eastern Ecuador, bear an uncanny resemblance to the corresponding sexes of the White-shouldered Antbird, a more widespread Amazonian species with which the antshrike is partly sympatric. Males of both are glossy black, the male White-shouldered Antbird having some white, which is often concealed, near the bend of the wing; females of both species have the head, throat and chest black, with bright rufous upperparts and paler, cinnamon-rufous underparts. Thus, the two species appear nearly identical, except for a small amount of bare bluish skin found around the eye on both sexes of the White-shouldered Antbird. A similar parallel is seen between both sexes of the Narrow-billed Antwren, a threatened endemic of dry forest in north-eastern Brazil, and the corresponding sexes of the east Brazilian race *luctuosa* of the White-flanked Antwren. With each of these examples, there are clear structural, vocal and ecological differences separating the taxa, and yet their plumage characters are amazingly similar. Some parallels exist also between some antbirds and some members of the Furnariidae. The Russet Antshrike, with its rufescent wings and tail, duller brown mantle and rich ochraceous-buff eyebrow and underparts, bears a strong resemblance to several species of foliage-gleaner of the





**The Dot-winged Antwren** is placed in a monospecific genus that is probably most closely allied to the Formicivora antwrens. Unlike them it is generally a bird of humid forests. Ten subspecies are currently recognized, some of which may soon be elevated to full species, given apparent vocal differences and lack of intergradation at points of parapatry. As it stands, this species is an example of heterogynism: the males of various races are similar while females differ radically. Females of the race *consobrinus* have the entire underparts rufous, while, across the Andes, females of the various races usually have black throats or black bellies.

[*Microhierax quixensis consobrinus*, Antioquia, Colombia. Photo: J. S. Dunning/Ardea]

genus *Philydor*, some of which occur in the same mixed-species canopy flocks with the antshrike. Even more striking, as Willis pointed out, is the resemblance between the female White-bearded Antshrike and both sexes of the White-collared Foliage-gleaner (*Anabazenops fuscus*); these two bamboo specialists, confined to the Atlantic Forest, often occupy the same bamboo thickets in parts of Brazil.

Juvenile males of many species resemble adult females in plumage characters. Older subadult males of these species will show individually variable and often confusing combinations of adult male and adult female plumage characters. The Spot-winged Antbird serves as just one example. Adult males are grey throughout, with white-dotted wing-coverts, while adult females have a grey crown but are brown-backed, with buff-dotted wing-coverts and rich ochraceous-buff underparts. Subadult males can have the head and underparts entirely grey, like adult males, but with the back, wings and tail brown, like adult females, and with a combination of white-spotted grey coverts and buff-spotted brown coverts on the wing.

The tendency of subadult males to resemble adult females has, in some instances, led to confusion over both plumages and taxonomy. For example, the sexes of the White-lined Antbird were originally described as two different species. In 1914, Hellmayr and J. G. von Seilern described *Pernostola lophotes* from a specimen that was almost certainly a subadult male; this bird was conspicuously crested, rufous above and whitish below, and with blackish primary coverts. Subsequent female specimens were collected that resembled the type, except for having rufous primary coverts. This species went by the English name of "Rufous-crested Antbird". In 1966, Berlioz described a single adult male specimen as *P. macrolopha*, the "White-lined Antbird"; this bird was also conspicuously crested, but was entirely blackish except for white fringes on the upperwing-coverts and white underwing-coverts. The female of *macrolopha* was considered unknown for more than a decade. It remained for T. A. Parker to sort out the confusion surrounding these two taxa. Parker's fieldwork in the Tambopata Reserve of Madre de Dios, in Peru, showed that "*P. macrolopha*" was clearly the male of *P. lophotes*. The blackish primary coverts of the type speci-

men of *lophotes* represented the first emerging adult male characters of a bird that was otherwise female-plumaged, and led to the mistaken conclusion that the sexes of *lophotes* were nearly identical to one another in plumage.

It is thought that temperate-zone birds keep the moulting and breeding periods apart, given the high resource requirements of the two events. As summarized by M. S. Foster, however, overlap between the moult and breeding cycles is widespread among birds living near the equator. Included in the studies on which Foster drew was that of D. W. Snow and B. K. Snow, who kept track of evidence of moult in individuals of the Barred Antshrike that they netted in Trinidad. Those authors found that, in nearly every month of the year, approximately half of the individuals trapped were in moult; in addition, irregularities in the sequence of wing moult were common among these individuals. Seeking to relate the cycle of moult with breeding in the same area, they searched for, and found, nests of the Barred Antshrike in every month of the year except two. Snow and Snow's tentative conclusion was that the population of the species as a whole had no well-defined annual cycle, although it is possible that individual pairs may have annual periods of moult and nesting.

## Habitat

The Thamnophilidae are entirely Neotropical in distribution, with only relatively few species reaching southern Mexico and northern Argentina. They occur on islands only near continental shores, such as Coiba Island and the Pearl Islands, off Panama, Gorgona Island, off Colombia, Margarita Island, off Venezuela, Tobago, and small islands immediately off the coast of southeastern Brazil.

The vast majority of thamnophilid antbirds inhabit lowland and foothill humid evergreen forest. The family reaches its greatest diversity in the Amazon Basin, where 40-45 species occur syntopically at various sites in Colombia, Brazil, Peru and Bolivia. Examples of such localities are the Tapajós National Park, Alta Floresta and Cachoeira Nazaré, in Brazil, the Tambopata-





The *Formicivora antwrens* are strikingly marked birds of brushland and dry forest habitats, mostly in Brazil. This **Black-bellied Antwren** displays some of the group's common morphological themes, namely the black underparts of males and the gleaming white supercilium separating a dark face from a brown cap. Their sister-group has not been identified, but results of various molecular studies suggest that it might be the "grey antwren assemblage" of *Myrmotherula*.

[*Formicivora melanogaster bahiae*, Ceará, Brazil.

Photo: Luiz Claudio Marigo]

Candamo Reserved Zone and Manu Biosphere Reserve, in Peru, and the Lower Rio Heath, straddling the Peru-Bolivia border. By comparison, antbird species diversity at single sites in the Guianan lowlands of southern Venezuela, Guyana, Surinam and French Guiana typically peaks at 25-35 species. Diversity tapers off rapidly in Central America, with totals of 30 species for all of Panama, 22 for Costa Rica and only seven for Mexico, and similar reductions are evident in Venezuela north of the Rio Orinoco and in the area south of the southern fringes of Amazonia. The Atlantic Forest of eastern Brazil, north-eastern Argentina and southern Paraguay has a highly endemic antbird fauna, but seldom do more than 16 thamnophilid species occur together at a single site within this region. Antbirds are altogether absent from much of Argentina and all of Chile. Species diversity also falls off rapidly with increasing elevation in mountainous regions; fewer than 10% of all species occur above 2000 m, and none occurs regularly above 3000 m. Most members of the family are arboreal, ranging from just above ground to the canopy, but a few are primarily or exclusively terrestrial. Examples of the latter include the Banded Antbird, the Wing-banded Antbird, the Stripe-backed Antbird and several members of the genus *Myrmeciza*.

The lowland humid and wet forests of Central and South America are far from homogeneous, and in fact represent a mosaic of different forest types, all of which are inhabited by antbirds. *Terra firme* is upland forest, situated on slightly elevated shelves and beyond the reach of flooding rivers that overflow their banks during the rainy seasons. This is the tallest and, usually, the most floristically and faunistically diverse of the lowland humid forests. It is in the *terra firme* forests of the Amazon Basin that the family Thamnophilidae reaches its zenith of diversity. Despite the fact that such forests represent the single richest habitat for antbirds, it is the contribution made by a variety of other forest types and by micro-habitats within the forest that elevates the species diversity of antbirds in Amazonia above that found in the more northern Guianan and Chocó lowlands. The availability of numerous habitats and micro-habitats within small geographical areas allows for habitat and resource specialization, which, in turn, promotes greater resource-partitioning and species-packing.

Somewhat less physically imposing and less diverse than the *terra firme* forests are the bands of forest, sometimes many kilometres wide, which border rivers and freshwater lagoons, and which are subject to periodic flooding during the rainy seasons. *Várzea* is forest that is seasonally flooded by muddy, white-water rivers, whereas the term *igapó* is more properly applied to both permanently flooded and seasonally flooded forest bordering black-water rivers. White-water rivers are so called because of the milky appearance caused by an abundance of suspended silt in the water, whereas black-water rivers derive their name from the dark tea-like appearance caused by an abundance of tannins. Black-water rivers drain sandy-soil forests rich in tannin-producing plants. A number of antbird species inhabit seasonally flooded forest, and some are seldom found far from river, stream and lake-edge forest and adjacent second growth. These last include such species as the Glossy and Castelnau's Antshrikes, the Amazonian Streaked and the Guianan Streaked Antwrens, Klages's Antwren (*Myrmotherula klagesi*), the Leaden Antwren, and the Band-tailed, Black-chinned, Ash-breasted and Silvered Antbirds.

The Amazon and its larger tributaries are also liberally sprinkled with islands of varying ages and at different stages of development. River islands are created in one of two ways: either a meandering river cuts a new channel, carving off and isolating land that was previously connected to the main bank, or new islands can form from sandbars, usually during low-water seasons when sandbars are first exposed and then are enlarged by silt deposition. Those formed by the first process are sometimes referred to as "oxbow islands", and the flora and fauna of such an island are initially identical to, or a subset of, those on the main riverbank from which it came. In contrast, river islands formed from sandbars begin with no vegetation at all, but they are quickly colonized by pioneer plant communities. Grasses yield rapidly to a sandbar scrub community composed of willows (*Salix*), the willow-like composite *Tessaria integrifolia* and another composite shrub, *Bacharis*, the whole taking three or four years to mature. The *Tessaria*-dominated scrub community is, in turn, replaced by dense stands of *Gynerium* cane, growing to several metres in height. The cane is eventually overtopped by young





The *Drymophila* antbirds are united by a suite of shared characters: raspy songs, streaky or rufescent plumage, long tails and a predilection for creeping through patches of bamboo. Although the **Long-tailed Antbird** is the only Andean representative of this group, a thorough analysis of regional variations, and the presence or absence of interbreeding at the junction between races, may reveal that this taxon, as currently understood, really comprises two or more species.

[*Drymophila caudata*.  
Photo: J. S. Dunning/  
Ardea]

stands of *Cecropia* forest, which, in turn, are gradually overtopped by figs (*Ficus*) and other species more typical of mainland riverbank forest. These same successional dynamics take place continually on established islands in silt-laden white-water rivers. Islands are constantly eroded on their older, upstream ends, while silt and sand are continually deposited on the younger downstream end, laying the groundwork for beach formation and the same successional processes as those outlined above.

Oxbow islands and the upstream ends of older sandbar islands are usually populated by the same *várzea* and *igapó* birds as are found on the adjacent main riverbanks. A number of avian species have, however, evolved to capitalize on the newly created successional habitats that arise during river-island formation and maturation. These are the true river-island specialists, and, as first pointed out by J. V. Remsen and Parker, many of them are rarely, if ever, recorded away from river islands. In one of the first studies to evaluate the degree of ecological specialization among river-island birds, G. H. Rosenberg found that, in north-eastern Peru, four of 18 species that appeared to be restricted to river islands were thamnophilid antbirds. These were Castelnau's Antshrike, the Leaden Antwren, the Ash-breasted Antbird and the Black-and-white Antbird. Of these, the first three were largely confined to pure stands of *Cecropia* forest. The Black-and-white Antbird is a specialist of the younger stages of succession, being most common in the *Tessaria*-scrub habitats, but also utilizing rank grass, cane, and thickets of *Heliconia* and other broadleaf plants in the understorey of the *Cecropia* groves.

The term "gallery forest" is most accurately applied to narrow riparian belts of forest that follow watercourses in otherwise drier, often non-wooded environments. These, too, may flood seasonally, and they share a number of floristic and faunal similarities with *várzea* or *igapó* of nearby regions. Despite this, some bird species are restricted to gallery forest, one example being the globally threatened Rio Branco Antbird, found in gallery forest bordering the Rio Branco and its tributaries in northern Roraima, in Brazil, and immediately adjacent southern Guyana. Among the antbirds that are locally common in gallery forest are the Barred, Great and Black-crested Antshrikes, the Large-billed Antwren (*Herpsilochmus longirostris*) and the Band-tailed, Black-chinned, Mato Grosso and White-bellied

Antbirds. Some gallery forests are characterized by an abundance of palms, particularly moriche or buriti palms (*Mauritia flexuosa*). Where these grow in essentially pure stands, often in low-lying, swampy ground, they are better termed "palm forest". Antbirds are not well represented in palm forest, but some species, such as the Large-billed Antwren and the White-bellied Antbird, occupy such habitats locally.

Along the Caribbean coast, mangrove swamps provide an array of successional stages from subpioneer to the oldest, not unlike the stages of island formation. In French Guiana, as described by O. Tostain, the Black-crested Antshrike occupies all seven stages, the Blackish-grey Antshrike and the White-fringed Antwren inhabit the middle stages, while the older stages are colonized by species more typical of riparian habitats in the interior, such as the Guianan Streaked Antwren and the Black-chinned, Silvered, Black-headed and Black-throated Antbirds. With the exception of the Blackish-grey Antshrike, the relevant race of which, *kulczynskii*, appears to be confined to French Guiana and immediately adjacent Brazil, these same species, especially the Black-crested Antshrike and White-fringed Antwren, can be found in mangrove stages along the coast of Surinam, Guyana and north Venezuela.

An under-appreciated class of habitats occupied by many antbirds is labelled collectively as Amazonian white-sand forest. The term "Amazonian *caatinga*" has been proposed, to encompass the various white-sand habitats of the region, but it has not gained universal acceptance. These forests are very patchily distributed, covering about 60,000 km<sup>2</sup> in Brazil alone, and a nearly equivalent area outside that country, primarily in southern Venezuela and other parts of the Guianan Shield, south-eastern Colombia and, to a lesser extent, north-east Peru. The distributional centre of the habitat is in the upper Rio Negro region, but it occurs locally throughout Amazonia. These forests are characterized by sandy soils containing virtually no clay, and which are extremely nutrient-poor, or leached, with poor water retention. The exact structure of white-sand forest varies tremendously from site to site, ranging from dense savanna scrub to tall forest growing to 30–40 m, such that the formation as a whole is more of a patchwork or habitat mosaic than a single habitat. In general, white-sand forests are stunted and species-depauperate, but with a high degree of endemism. Characteristic dominant families of



The genus *Cercomacra* includes twelve furtive species with fairly long tails and dull plumage, usually grey or black in males, brown or rufous in females. Ten of these species can be split into two groups. One of these, centred around the **Dusky Antbird**, is characterized by deep pouch-nests, the other by shallow cup-nests. There are also vocal differences, suggesting that the morphological similarity between these two groups might be due to convergence rather than ancestry, in which case *Cercomacra* would have to be subdivided. The two final species in the genus are either intermediate or indeterminate in position.

[*Cercomacra tyrannina crepera*,  
Carara Biological Reserve,  
Costa Rica.  
Photo: Kevin Zimmer]



woody plants include Leguminosae, Euphorbiaceae, Sapotaceae, Guttiferae, Rubiaceae and Myristicaceae. These habitats are known locally by many different names; in Amazonian Brazil they are often referred to as *campina* or *caatinga*, the latter not to be confused with the xeric scrublands of the same name in north-eastern Brazil.

Long ignored, white-sand habitats are now coming under increasing scrutiny from ornithologists, largely in response to many significant recent discoveries. Several of these involve thamnophilids. Three species, Cherrie's Antwren (*Myrmotherula cherriei*), the Grey-bellied Antbird and the Yapacana Antbird, were long known from specimens, but were virtually unknown in life prior to 1990. All have proven to be largely or entirely restricted to sandy-soil forest. Of these three, the Yapacana Antbird is perhaps the most specialized and the most intriguing. For decades it was known only from seven specimens collected between 1931 and 1947 in the vicinity of Cerro Yapacana, an isolated tepui, or tabletop mountain, in Amazonas, south Venezuela; no habitat description accompanied the specimens, and later authors, perhaps describing the general environment surrounding Cerro Yapacana, listed the antbird's habitat as high rainforest at about 100 m. Over the next 50 years, a female mist-netted in sandy-soil forest in south-eastern Colombia in 1981 and another collected in "tall seasonal rain forest" in extreme southern Venezuela in 1984 provided the only subsequent records, neither of which shed significant light on the habitat requirements of what had become something of a mystery species. Then, in 1997, the Yapacana Antbird was rediscovered by J. Coons and D. Stejskal in white-sand forest near the Venezuelan settlement of Picua, on the south bank of the Río Ventuari, also in Amazonas. In the following year, detailed investigations by K. J. Zimmer revealed that, although there were different types of white-sand forest in the Picua area, the Yapacana Antbird seemed to live only in a habitat known to local people as "*monte cerrado*". This was a stunted, virtually impenetrable woodland growing on fine, compacted white-sand soils that are seasonally saturated. The canopy varied from 6 m to 10 m, with few trees thicker than 10 cm in diameter, and with abundant vines, sawgrass and bamboo in the understorey. Within this specialized habitat, the Yapacana Antbird proved to be locally abundant. Subsequent to the unravelling of this mystery, populations of the species were discovered in Brazil for the first

time; these were also in dense white-sand forest resembling the *monte cerrado* of Venezuela.

In the early 1990s, Alvarez and Whitney began to document a unique avifauna from white-sand forests near Iquitos, in Loreto, north-western Peru. A series of discoveries followed, which has, to date, produced published descriptions of three new species and a new subspecies, with three of the four newly described taxa being antbirds. The Ancient Antwren, the Allpahuayo Antbird

The **White-shouldered Fire-eye** is an endemic of the Atlantic Forest of south-east Brazil, east Paraguay and north Argentina. It shares the genus *Pyriglena* with two other species, forming a neat unit. Males of all three species are largely black, with varying amounts of white on the wings or mantle. Females are more variable, even between races of the same species (another example of heterogyny). Both sexes have the fiery eyes, a feature that is surprisingly conspicuous in the dark forest understorey.

[*Pyriglena leucoptera*,  
São Lourenço da Serra,  
São Paulo, Brazil.  
Photo: Edson Endrigo]







The **Black-faced Antbird** is one of four species in *Myrmoborus*, a genus whose relationship with the fire-eyes (*Pyriglena*) is supported by nest structure and stereotypic tail movements – they all pump their tails down and let them rise slowly. As in the fire-eyes, dimorphism is pronounced, with males (left) mostly grey and black, and females paler with dark masks (right).

[Left: *Myrmoborus myotherinus ochrolaema*, Cristalino Jungle Lodge, Alta Floresta, Mato Grosso, Brazil. Photo: Edson Endrigo.

Right: *Myrmoborus myotherinus sorious*, Fazenda Rancho Grande, Rondonia, Brazil. Photo: Kevin Zimmer]

and the Northern Chestnut-tailed Antbird (*Myrmeciza castanea*) have all been found to inhabit two distinct types of forest growing on nutrient-poor soils. One is a very dense and stunted *terra firme* forest, of a type called *varillal* by local inhabitants, which grows on nearly pure white-sand soils, and which is dominated by saplings of such white-sand specialists as the palm *Euterpe catinga*, and by *Caraipa* species (*Clusiaceae*). The other, known locally as *irapaya*, is a taller forest, to 40 m. growing on old, weathered clay soils as well as on sandy soils, and with a dense understorey of irapay palms (*Lepidocaryum tenue*).

Not all white-sand woodlands are restricted to Amazonia. *Restinga* encompasses the woody vegetation that covers the white-sand soils behind the dunes along the coast of Brazil. It once covered an almost unbroken stretch from Maranhão south to Santa Catarina, with patches of similar habitat reaching north to the mouth of the Amazon. In recent decades, however, it has become a fragmented and endangered habitat, much of it having been transformed into beach resorts and other coastal developments. *Restinga* varies from scattered tall thickets of dense shrubby growth on nearly pure white sand, within a few hundred metres of the coast, to taller, more diverse forest several kilometres inland. In general, *restinga* is sclerophyllous and stunted, with an understorey characterized by an abundance of terrestrial bromeliads. Although structurally similar to some of the Amazonian white-sand forests, the two are floristically unrelated, *restinga* being more similar to the nearby humid Atlantic Forest. Taller examples of this forest type are occupied by Plain Antwrens, Rufous-winged Antwrens (*Herpsilochmus rufimarginatus*) and Squamate Antbirds, and provide critical habitat for the globally threatened Unicoloured Antwren. *Restinga* is most specialized, and has the most impoverished avifauna, in the littoral zones immediately adjacent to the beach. Here, windswept and sand-blasted impenetrable thickets little more than a few metres high, and with a spiny understorey of cactus and bromeliads, are often isolated from one another by barren expanses of pure white sand. Relatively few bird species inhabit such extreme environments, but this is the home of the recently described Restinga Antwren, which is restricted to a small coastal strip in the state of Rio de Janeiro. Perhaps because of competitive release, the antwren is surprisingly common within its tiny range and endangered habitat.

The foregoing examples illustrate several points. At the most basic level, they provide several instances of the adaptive ability of antbirds to occupy highly specialized habitats. At the same time, they highlight the complexity and heterogeneity of low-

land Amazonian forests in general, and of white-sand forest in particular, while emphasizing that underlying soil mosaics can profoundly influence avian evolution and distributions. Finally, the discovery and rediscovery within little more than a decade of so many species, many of them from near centres of human population and in regions that have received considerable attention from ornithologists, demonstrates just how overlooked and under-investigated white-sand habitats have been.

Micro-habitats within forests create additional niches for birds, leading to greater overall species diversity. Patches of bamboo represent one of the most important micro-habitats in Neotropical forests. In lowland forests, the greatest diversity of bamboo-specializing birds occurs in south-eastern Peru, where A. W. Kratter recorded that, at single localities, as many as 19 bird species of a number of families can be restricted to *Guadua* bamboo thickets. Patches of *Guadua* are common in south-western Amazonia, eastwards through the Brazilian state of Acre, but become less common and more scattered farther east. Nonetheless, diverse communities of avian bamboo specialists have been documented in Brazil from sites in Rondônia, Mato Grosso and southern Pará, although, with few exceptions, these represent subsets of the more species-rich communities of Peru. Antbirds are conspicuous components of these communities. Of the many thamnophilids that occupy these lowland bamboo thickets, the Striated Antbird and the Manu Antbird are probably the ones most restricted to bamboo, seldom being found outside it. The Bamboo Antshrike (*Cymbilaimus sanctaemariae*) and Goeldi's and the White-lined Antbirds are also closely tied to bamboo, although, in addition, they occupy vine tangles or thickets in some floodplain-forests. Some populations of certain widespread species show much stronger affiliations with bamboo than do others. Thus, in some areas, the Chestnut-backed Antshrike, the White-shouldered Antshrike, the Ornate Antwren (*Myrmotherula ornata*), the White-flanked and Dot-winged Antwrens and the White-browed Antbird (*Myrmoborus leucophrys*) are found primarily in bamboo thickets, whereas in other parts of their ranges no such association is found. For many of these facultative users, the bamboo itself may be less important than the structure of the forest. Such birds are more dependent on light-penetrated gaps or forest edge, and in some regions bamboo species are the most common plants occupying these niches.

Bamboo specialization is not confined to antbirds living in the Amazonian lowlands. Indeed, bamboo diversity is highest in the Atlantic Forest of eastern Brazil, where a number of endemic





The genus *Hypocnemoides* contains two similar species, one of which is the **Black-chinned Antbird** of mainly northern Amazonia.

They are both streamside or lakeside birds, rarely found far from the water's edge, where they regularly join the small bands of insectivores that patrol this narrow strip of habitat.

Although their affinities are postulated to be with *Hypocnemis* and *Drymophila*, this relationship seems unlikely, given considerable dissimilarities in appearance and behaviour.

Both *Hypocnemoides* species build suspended pouch-nests, as do *Hypocnemis*, but their stereotyped body movements are different from the latter genus, as the tail is often held partially fanned and cocked slightly above the horizontal, and it is regularly flicked up. Further analysis is required to elucidate which are the true taxonomic neighbours of *Hypocnemoides*.

[*Hypocnemoides melanopogon melanopogon*, Guyana.

Photo: Doug Wechsler/VIREO]



genera combine with more widespread woody bamboos, such as *Merostachys* and *Chusquea*, to provide diverse bamboo communities from the coastal lowlands to the highest peaks of the Serra do Mar. Notable among the birds specializing on these bamboo thickets are the rare and endemic White-bearded Antshrike and several members of the genus *Drymophila*. Among the latter, all six of the Atlantic Forest species utilize bamboo to some extent, and four of them, the Ferruginous, Bertoni's, Ochre-rumped and Rufous-tailed Antbirds, are near-obligate specialists. Dusky-tailed Antbirds and some populations of the Scaled Antbird (*Drymophila squamata*) are also heavy users of bamboo, but can also be found in other, structurally similar habitats. Of the other members of the genus, the Striated Antbird, as mentioned earlier, is an obligate denizen of Amazonian thickets of *Guadua*, and the montane Long-tailed Antbird is a specialist of Andean bamboo thickets. In the Neotropics, Andean bamboo communities are second in diversity only to those of eastern Brazil. Accordingly, many Andean bird species are confined to patches of bamboo, particularly those of the widespread genus *Chusquea*. These Andean bamboos, however, occur primarily above the elevational limits of most thamnophilids and, of the Andean antbirds, only the aforementioned Long-tailed Antbird could truly be considered a bamboo specialist. Many formicariid ground-antbirds range much higher elevationally, and they, in turn, do exhibit varying degrees of bamboo specialization.

Vine tangles provide a less obvious micro-habitat upon which many antbirds specialize. The abundance of vine tangles varies greatly between forests. Lowland forests subject to pronounced dry seasons are usually more vine-rich than are either montane forests or those lowland forests in wetter regions. Although many bird species opportunistically forage or nest in the cover provided by vine tangles, others rarely stray far from them. Among the antbirds, most populations of the Fasciated Antshrike, the Spot-backed Antshrike, the Grey Antbird and the Dot-winged Antwren could be classified as vine specialists, and some other widespread species, such as the White-flanked Antwren, show a preference for vine tangles in parts of their range.

Similarly, a number of antbirds primarily inhabit treefall gaps within forest. Such openings in the forest canopy allow light to

penetrate to the forest floor, fuelling rapid colonization by pioneer shrubs, trees and herbaceous growth. The resulting dense profusion of new growth, combined with fallen branches and decaying logs, provides understorey insectivores with a wealth of foraging opportunities. The Undulated, Black-throated and White-shouldered Antshrikes, the Black Bushbird (*Neotantes niger*) and the Black Antbird (*Cercomacra serva*), along with the Warbling, Black-headed, Ferruginous-backed and Chestnut-tailed Antbirds, are all regular users of treefall light-gaps, with the first four of those seldom being found far from treefalls.

The Caura Antbird is a poorly known species found only in the western portion of the Pantepui region south of the Rio Orinoco in the Venezuelan states of Bolivar and Amazonas, and in extreme northern Brazil. It is known mainly from specimens collected on the slopes of scattered tepuis, many of which are strongly dissected and strewn with boulders and isolated blocks. The species has been studied only by K. J. Zimmer, in the Serrania de la Cerbatana of south-western Venezuela, where it occupies forested lower slopes of mountains that are strewn with large boulders, the biggest of which are up to 8 m tall and 15 m long. These boulders are covered with moss and ferns, and their tops and crevices are festooned with terrestrial bromeliads, cacti and bamboo. Many of them are topped with small trees, the gnarled roots of which drape over the rocks like tendrils, trapping leaf litter and organic debris. These rocks appear to be a critical component of the Caura Antbird's habitat, providing foraging strata that only the antbirds seem to exploit (see Food and Feeding). This species appears to have evolved as a specialist to occupy a rocky niche that is locally abundant in parts of the highly eroded Guianan Shield.

Many antbirds inhabit humid foothill forest above the lowlands, particularly in the lower Andean foothills, the lower slopes of the Guianan tablelands, and the mountains of the Atlantic Forest region of eastern Brazil. As previously noted, however, thamnophilid diversity drops off rapidly with increasing elevation. Parker and colleagues compiled a landmark database, published in 1996, of zoogeographical and ecological attributes of Neotropical birds. For each species they calculated the centre of abundance, an attribute defined as the "heart of a species"

**The Silvered Antbird** constitutes a rather unusual monospecific genus with unknown taxonomic affinities. It has a long thin bill, conspicuous pale pink legs and a curious side-to-side tail motion. It also occupies an unusual niche, being found mostly along the immediate edges of rivers, streams and oxbow lakes, where it commonly gleans aquatic and semi-aquatic insects and their larvae from partially submerged vegetation and from the water's surface. Unfortunately, no clues can be drawn from nest architecture, as its nest has never been described, despite the species being common throughout much of Amazonia. It is often located by its distinctive song, a long rising chipper, introduced by a single more emphatic note.

[*Sclateria naevia argentata*, Imuya Cocha, Sucumbios, Ecuador. Photo: Doug Wechsler/VIREO]





Like most antbirds, members of the genus *Percnostola* are highly sexually dimorphic, the males being largely black, and the females more or less rufous.

This dimorphism caused considerable confusion in the **White-lined Antbird** (male pictured above), as the first specimens taken were a young male (similar to the female) in 1914, followed by a series of adult females. On the strength of these specimens, the taxon was named the "Rufous-crested Antbird". When an adult male was finally collected in 1966, it was assumed to be a new species, and named the "White-lined Antbird".

Thus, for a decade, males and females of one taxon were thought to constitute two different species.

It was only when pairs were encountered in the field that the error was discovered. The White-lined Antbird pounds its tail down and then slowly raises it in a motion shared by the **Black-headed Antbird** (female pictured below), suggesting that these two forms may be closely related.

[Above: *Percnostola lophotes*,  
Pantiacolla Lodge,  
Manu National Park, Peru.  
Photo: Bernard van Elegem.]

Below: *Percnostola rufifrons rufifrons*,  
Brownsberg Nature Park,  
Surinam.  
Photo: J. S. Dunning/  
VIREO]



elevational distribution; the zone in which the bird species is most common". Of 196 thamnophilid species treated by those authors, 139, or 71%, were considered to have a centre of abundance termed "Lower Tropical", defined as "lowlands lower than 500 m in the tropics". For 29 species, 15%, the centre of abundance was thought to be "Hill Tropical", defined as "hills and lower slopes, 500-900 m, in the tropics", while nearly as many species, 26, fell into the "Upper Tropical" category, the "higher slopes, 900-1,600 m, in the tropics". Among the Thamnophilidae, only the Uniform Antshrike, which ranges to 2900 m, and the race *castanoptera* of the White-backed Fire-eye were categorized as being centred in the "Middle Montane" zone, defined as "mountains, middle range, 1,600-2,600 m". No thamnophilids were categorized as having a range centred in the "Upper Montane" zone, above 2600 m.

Although most antbirds are confined to humid forest environments, a surprising number have adapted to arid or semi-arid biomes. The semi-arid interior of north-eastern Brazil is

characterized by a thorny scrub formation known as *caatinga*. Growing on rocky, sandy or clay soils, at the mercy of intense dry seasons that may last for eight months, the *caatinga* is typified by drought-deciduous, often spiny trees and shrubs, particularly euphorbias and legumes, together with numerous stem succulents, including cacti such as the columnar *Cereus jamacaru* and various species of *Opuntia*, and abundant terrestrial bromeliads such as *Bromelia laciniosa*. Herbaceous plants are ephemeral, appearing mainly in response to the somewhat erratic seasonal rains, and grasses are few. The *caatinga* formation covers some 750,000 km<sup>2</sup>, and is far from uniform; in the most arid regions it may resemble shrub-desert, whereas at its peripheries and in more humid micro-climates it grades into deciduous dry forest. This environment is home to the Silvery-cheeked Antshrike (*Sakesphorus cristatus*), the subspecies *capistratus* of the Barred Antshrike, the Planalto Slaty Antshrike (*Thamnophilus pelzelni*), the subspecies *stagnus* of the Great Antshrike, the Black-bellied, White-fringed, Black-capped and





These males of the **White-bellied Antbird**, **Chestnut-backed Antbird**, **Sooty Antbird** and **Ferruginous-backed Antbird** illustrate the range of variation found within the genus *Myrmeciza*. It contains a total of 20 medium-sized to large species with broadly similar morphology; they either inhabit the lower storey or are partially terrestrial. As our understanding of antbird relationships improves, it is becoming increasingly clear that this genus is polyphyletic. In other words, some of its members are likely to be less closely allied to each other than they are to species currently placed in other genera, including *Myrmorchilus*, *Pyriglena*, *Rhopornis*, *Myrmoborus*, *Gymnocichla*, *Sclateria* and *Pernostola*.

[Top: *Myrmeciza longipes griseipectus*, Bolívar, Venezuela. Photo: J. S. Dunning/VIREO.]

Left: *Myrmeciza exilis occidentalis*, Carara Biological Reserve, Costa Rica. Photo: Kevin Zimmer.

Right: *Myrmeciza fortis fortis*, Taisha, Morona-Santiago, Ecuador. Photo: Doug Wechsler/VIREO.

Bottom: *Myrmeciza ferruginea ferruginea*, Guyana. Photo: Doug Wechsler/VIREO.]

Caatinga Antwrens, as well as the Pectoral Antwren (*Herpsilochmus pectoralis*), and the Stripe-backed Antbird.

In slightly elevated portions of south-central Bahia and north-eastern Minas Gerais, the *caatinga* grades into a stunted, dry deciduous forest known regionally as *mata-de-cipó*, or "vine forest". This forest is characterized by a low canopy, often 12 m or less, a mid-storey of small trees and shrubs covered with vines and bromeliads, and an understorey dominated by large patches of the terrestrial bromeliad *Aechmea*, some of which reach nearly 2 m in height. This unique and endangered habitat is occupied by two equally unique and globally threatened antbirds, the Narrow-billed Antwren and the Slender Antbird, as well as by many of the more generalized *caatinga* species listed above. The Slender Antbird is an extreme specialist, concentrating much of its foraging, and possibly its nest-building, within the thickets of *Aechmea*.

Antbirds occur in other xerophytic formations, although none of these can boast of the same levels of thamnophilid diversity as that found in the *caatinga*. The *caatinga* is connected by a corridor of mostly open habitats across the Brazilian Planalto

Central to another arid scrubland, the Chaco, which in the most inclusive terms takes in portions of southern Bolivia, western Paraguay and northern Argentina. The Chaco is a mostly flat, gradually sloping alluvial plain, characterized by clay soils, and by highly seasonal and irregular precipitation patterns, with most rain falling during the austral summer, and intense dry seasons that may persist for up to nine months. It is driest in the west, where the mean annual precipitation is about 35 cm, and where the landscape is dominated by dense, stunted thorn-scrub 5-10 m high, with an understorey characterized by abundant cacti and terrestrial bromeliads. The Chaco antbird community is virtually a smaller subset of that of the *caatinga*, with Great and Barred Antshrikes, Black-bellied Antwrens and Stripe-backed Antbirds, as well as, locally, Giant Antshrikes, Variable Antshrikes (*Thamnophilus caerulescens*) and Rusty-backed Antwrens.

Bordering the southern Caribbean, the extreme northern part of Colombia and north-western coastal Venezuela encompass another arid region with a variety of habitats ranging from shrub-desert to taller thorn-scrub and deciduous dry forest. Antbird di-



versity here is extremely limited, but includes the endemic Black-backed Antshrike and the race *pulchellus* of its congener, the Black-crested Antshrike. Another member of the genus *Sakesphorus*, the Collared Antshrike, represents the Thamnophilidae in the drier habitats of the Tumbesian region of south-west Ecuador and north-west Peru, where it is common in dense algarrobo (*Prosopis*) riparian woodland and lighter thorn-scrub, as well as in seasonally dry *Bombax* forest. This species also occupies equally arid habitats in the Marañón Valley of north-western Peru, where the cordilleras to the east have created a giant rainshadow, and the valley floor is vegetated by deciduous dry forest and desert scrub dominated by *Prosopis*, *Acacia*, abundant cacti and herbaceous shrubs.

A welcome addition to the family, described as recently as 1995, is the Marsh Antwren of south-east Brazil, which inhabits littoral marshes dominated by bulrush (*Typha*) and club-rush (*Scirpus*), with grasses and scattered shrubs. The most ecologically similar species are the closely related Rusty-backed and White-fringed Antwrens, which occupy marshy, grassy savanna and *campo* habitats through much of northern South America, but those two are not so restricted to a particular type of habitat as is the Marsh Antwren.

Diversity of habitat use among different populations is rather a common feature of antbirds. Although some geographically wide-ranging thamnophilids occupy essentially the same habitats throughout their ranges, others exhibit striking shifts in habitat from one population to another. One of the most extreme examples involves the largest member of the family, the Giant Antshrike. Where it is most common, in the Atlantic Forest portion of its range, this species occurs in humid evergreen forest, from sea-level up to wet, elfin ridgetop forest, usually with extensive bamboo in the understorey. In the Andes, the association with bamboo is less pronounced, and the species occupies mostly dense growth along the margins of ravines and streams in montane forest. At lower elevations in Bolivia, Paraguay and Argentina, Giant Antshrikes are found only in dense thickets of thorny bushes and terrestrial bromeliads in xerophytic, stunted Chaco woodland, a far cry from the fog-shrouded, wet forest which they inhabit elsewhere. In most of Amazonia, the Blackish-grey Antshrike occupies islands and, to a lesser extent,

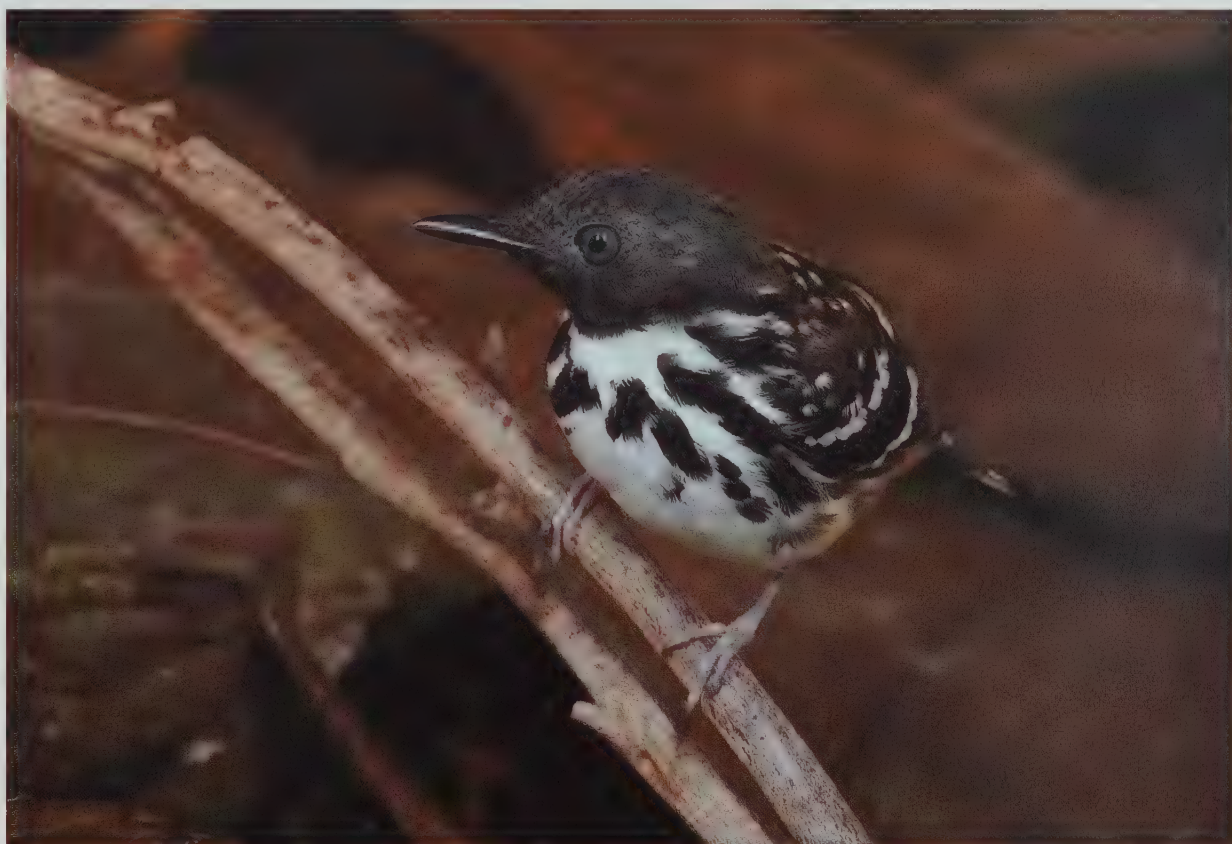
riverbanks in the dense understorey of seasonally flooded *várzea* and *igapó* forest. In French Guiana, however, the race *kulczynskii* is found mostly in the middle stages of coastal mangroves, although it also occurs along some rivers near the coast. In contrast, in eastern Colombia and south-western Venezuela, the subspecies *cinereoniger* is most common in dense, stunted savanna woodlands which are seasonally flooded and which grow on white-sand soils. As a third example, the nominate, western race of the Amazonian Antshrike (*Thamnophilus amazonicus*) is almost entirely confined to riverine viny borders and gaps in *várzea* and *igapó*. In south-central Amazonian Brazil, the subspecies *obscurus* is more widely distributed in forest edges and openings, inside viny forest and dense second growth, and in dense stands of *Guadua* bamboo in both *terra firme* and transitional forest. Farther east, the race *paraensis* occurs primarily in second growth and gaps of *terra firme* and *igapó* forest, but is rarely found in the *várzea* favoured by nominate birds. In the Guianan region, the subspecies *divaricatus* occupies liana-rich portions of *terra firme* forest, open forest near tepui summits, and river edges. Perhaps the most divergent population of the Amazonian Antshrike is the subspecies *cinereiceps* of the upper Rio Negro region, which is found in dense, stunted woodland growing on white-sand soils and in shrubby borders of taller, predominantly white-sand forest.

Not all cases of regional habitat shifts by thamnophilids involve antshrikes. Across its extensive range, the White-fringed Antwren, as noted above, occupies the understorey and mid-storey of a variety of habitats. In some areas this species occupies several habitats, but most regional populations tend to be habitat-restricted. In southern Venezuela, south-east Colombia and northern Brazil north of the Amazon, the subspecies *orenocensis* and *rufiventris* are generally confined to either white-sand *campina* woodland or young second growth. In parts of the Guianas, nominate *grisea* is a mangrove bird, whereas, south of the Amazon, it occupies humid second growth and riparian vegetation in the Amazon Basin, *restinga* scrub on white-sand soil in coastal north-east Brazil, and tropical deciduous forest and *caatinga* scrub in interior north-east Brazil. In northern Venezuela, *intermedia* is more of a generalist, utilizing several habitats within the same region, including thickets along deciduous-forest bor-

#### The Spot-backed Antbird

is one of a stunning trio of similar species in the genus *Hylophylax*, the others being the Spotted Antbird (*H. naevioides*) and the Dot-backed Antbird (*H. punctulatus*). Both sexes of these three species, but especially the males, are dinky, boldly marked gems of the understorey. They share tonally similar songs, and a habit of flicking the tail upward then letting it fall slowly. Pairs of Spot-backed Antbird tend to forage independently, rarely accompanying antswarms, and generally spurning the company of mixed-species understorey flocks.

[*Hylophylax naevius*.  
Photo: J. S. Dunning/  
Ardea]







The classic antbirds are the ant-followers, and one of the classic ant-followers is the **White-plumed Antbird**. This sexually monomorphic species is one of the thamnophilids most regularly found in attendance at antswarms across its broad Amazonian range. With its unique facial ornaments and sly charisma, it is a joy to watch, especially when small groups are working a swarm. At such times, White-plumed Antbirds are constantly shifting position, vigilant, opportunistic, and sometimes quite tame. Being relatively small, they are subordinate to, and systematically attacked by, most other ant-followers. They rely on their extreme speed and agility to infiltrate the innermost zones of a swarm, to snatch prey from larger species, and to retreat just ahead of the inevitable attack. They return repeatedly to productive spots, despite being constantly assaulted.

[*Pithys albifrons albifrons*, Guyana.  
Photos: Doug Wechsler/  
VIREO]



ders and seasonally flooded savanna, taller deciduous thorn-scrub, gallery-forest borders, second-growth scrub and mangroves. Molecular analyses and studies of vocalizations and other behavioural characteristics are needed in order to determine whether these taxa should be maintained as subspecies, or whether they meet the criteria required for recognition as biological species (see Systematics).

Most of the preceding examples involve habitat shifts among subspecies, each of which has its own preferred range of habitats. In contrast, some species or subspecies are habitat generalists throughout most of their range, but with one or a few populations of the same taxon exhibiting pronounced specialization or restriction to a single habitat. For example, the White-flanked Antwren is something of a habitat generalist throughout much of its range, occupying the understorey and mid-storey levels of humid evergreen forest and second-growth woodlands, including *terra firme*, transitional forest, *várzea* and *igapó*. In Brazil, however, populations of the nominate race in northern Mato Grosso are found primarily in stands of *Guadua* bamboo, whereas populations of the same race in south-western Pará, south-eastern Amazonas, north-east Rondônia and parts of Amapá are confined to river-edge forest and are seldom found more than 100 m from the water's edge. Similarly, where the Ornate Antwren occurs in the absence of closely related congeners, it is widely distributed in humid evergreen forest. In regions that are also inhabited by closely related antwrens which employ dead-leaf foraging (see Food and Feeding), it is usually, although not always, restricted to particular habitats such as extensive *Guadua* bamboo thickets within forest, vine tangles at forest edge or in light-penetrated gaps, or narrow bands of forest and second growth immediately bordering river edges.

Both intra-taxon and inter-taxon habitat shifts are exhibited by the various populations of Barred Antshrikes. This species inhabits mainly thickets and shrubby borders at forest edge, often venturing into cultivated areas, gardens and parks with thickets, hedgerows and trees. It occurs in both arid and humid regions, and in many parts of its range is something of a habitat

generalist. In central and western Amazonia, however, the subspecies *radiatus* is almost exclusively a river-island bird, while in north-east Brazil the subspecies *capistratus* is largely an inhabitant of deciduous *caatinga* woodland. Regardless of subspecies, populations in savanna regions are usually restricted to gallery-forest edge or isolated areas of savanna woodland, whereas populations on islands where other *Thamnophilus* antshrikes are absent, such as Tobago and the Panamanian Isla Coiba, occur in almost all micro-habitats, ranging up to the crowns of trees.

In some cases, these geographical shifts in habitat are doubtless associated with underlying genetic differences between populations that will eventually be shown to be biologically distinct species. In other cases, they may be found to reflect a certain amount of behavioural plasticity. Which habitat a species occupies in a given region may be determined largely by competitive interactions with closely related congeners or ecological counterparts, or by competitive release from such interactions. Conversely, it may depend as much as anything on historical patterns of habitat expansion and contraction, combined with chronologies of ancestral colonization. Present-day patterns may be artefacts of whichever species were the first to radiate into vacant niches created by climatic dry-wet oscillations and the resultant habitat expansions and contractions. Once the first colonizing species establishes a toehold, ecologically similar competitors attempting to colonize may be forced to contract or expand their habitat-utilization patterns accordingly.

Because the bulk of antbird species are forest birds, they tend not to adapt well to man-altered habitats. Exceptions include the Barred, Lined, Bar-crested and Black-crested Antshrikes, all of which are known to occupy, at least regionally, not only highly degraded woodland and second growth, but also shrubby borders of city parks and gardens and even suburban yards. The Great Antshrike and several members of the genera *Cercomacra* and *Formicivora* are able to exploit highly degraded second-growth habitats, particularly where old fields or plantations have been allowed to regenerate. Tufted Antshrikes in eastern Brazil regu-

Members of the genus *Gymnopathys*, including the **White-throated Antbird**, are amongst the smallest "professional" ant-followers. When they are alone they tend to feed like larger species, pausing for prolonged periods on low, prominent perches close to the epicentre of the antswarm. In the presence of "bare-eyed" species of the genera *Phlegopsis* or *Rhegmatorhina*, they are usually supplanted, and forced to the periphery, where they flit about more rapidly, and hunt from higher branches.

[*Gymnopathys salvini*,  
Explorer's Inn,  
Madre de Dios, Peru.  
Photo: Doug Wechsler/  
VIREO]





larly inhabit the tangled understorey of regenerating orchards and banana plantations, as does the globally threatened Black-hooded Antwren (*Formicivora erythronotos*). Tufted and Variable Antshrikes and Serra Antwrens have all been found to occupy eucalyptus (*Eucalyptus*) plantations in which dense herbaceous vegetation, including bamboo, has been allowed to regenerate in the understorey. In Amapá, Brazil. White-bellied Antbirds have been recorded in the understorey of commercial pine (*Pinus*) plantations bordering *cerrado*, where thickets of terrestrial bromeliads have been allowed to grow beneath the pines.

### General Habits

Antbirds are, without exception, diurnal. So far as is known, they roost in trees or shrubbery, and do not use dormitory nests or holes as nocturnal shelters. Of the few published accounts of the roosting behaviour of thamnophilids, the most detailed is that of A. M. Young's observations of a male Spotted Antbird in the Caribbean lowlands of Costa Rica. The bird was discovered sleeping 3.2 m above the ground on a horizontal branch of a small rubiaceous tree. Young checked the site on 46 nights between 3rd February and 30th May, and on 39 of those found the bird roosting in the same tree, 84% of the time on the same branch. On the other seven nights, the antbird could not be located, despite a flashlight check of all similarly sized trees within 30 m of the original roosting tree. The time of the antbird's arrival at the roosting site was very regular, varying only from 17:47 to 18:12 hours, regardless of weather conditions.

These observations fit well with those by K. J. Zimmer of a female Spot-backed Antbird in Napo, Ecuador. This individual was found roosting on an exposed section of a horizontal branch of a slender understorey sapling 3-4 m above ground. Flashlight checks revealed its presence on the same branch on 15 consecutive nights, and on each following morning 30 minutes before dawn. As dawn approached, the first songs from a nearby male Spot-backed Antbird always elicited a series of loud "chip" notes from the roosting female, which immediately left the perch to join her presumed mate.

Little has been recorded of the loafing and comfort behaviour of the majority of antbirds. Most of what is known comes

from Willis's studies of obligate ant-following species (see Food and Feeding). Because of the superabundance of foraging opportunities presented by army-ant swarms, ant-following thamnophilids may have more time available for comfort behaviour. Antbirds which appear insatiable upon arriving at a swarm gradually slow down and begin to ignore all but the largest prey. During intervals between sightings of large prey items, they yawn, scratch, preen, egest waste material, and often retire to the protective cover of a vine tangle or thicket in order to loaf and preen. Antbirds which do not follow ants may not have the luxury of abundant time in which to indulge in these activities, and may need to devote a greater percentage of time to foraging. P. J. Marcotullio and F. B. Gill recorded the daily movements of a pair of colour-ringed Chestnut-backed Antbirds in Costa Rica; they found that the birds spent 93% of their time in foraging, and that the time spent at rest, described as sitting quietly, with intermittent preening, was almost entirely restricted to the two two-hour periods between 09:00 and 13:00 hours.

Loafing antbirds usually occupy horizontal perches, and visibly fluff their feathers, particularly the ventral and rump feathers. This may be a mechanism for trapping body heat, so that the bird expends less energy in maintaining its body temperature when resting. Loafing is often followed by preening and stretching. Preening birds alternately fluff different feather groups while running feathers between the tips of the mandibles. "Underwing-looking", in which a bird stretches one wing laterally and then inspects the wing-linings for several seconds, has been noted for several species of antbird. Head-scratching is most often accomplished by lowering one wing and then raising the foot over it, known as the indirect method of scratching.

Mutual grooming, or allopreening, has been noted for several species. Typically, one bird takes a perch next to its mate, and then ruffles the feathers of the head and neck as it bows forwards with the bill pointed downwards. The individual being groomed remains immobile in this head-down posture, in a nearly catatonic state, as its partner picks and nibbles at the feathers of the nape, head and face, as well as at the bill; the body feathers are usually not groomed. This solicitation-for-grooming posture, or ones very similar to it, has been noted for species in such diverse genera as *Thamnophilus*, *Cercomacra*, *Hylophylax* and



The genus *Rhegmatorhina* is a well-defined group of species, all of which are "professional" ant-followers.

The **Bare-eyed Antbird** is typical of this group in its unmarked upperparts and the large pale area of bare skin set in a dark face. This periorbital patch produces a startling goggle-eyed effect. It has been speculated that it might function as the "iris" in an eyespot design, making the bird seem larger than it actually is, and thus scaring away potential predators or frightening competitors at the swarm. Whether these thickened patches of skin also provide protection against the bites of ants is not known.

[*Rhegmatorhina gymnops*, Cristalino Jungle Lodge, Alta Floresta, Mato Grosso, Brazil. Photo: Edson Endrigo]



Another duo of "professional" ant-followers are the bare-eyes (*Phlegopsis*), both of which have large pinkish patches of skin around the eye, and both of which show plumage that is primarily blackish and russet. Because of its large size, the **Black-spotted Bare-eye** is usually dominant at antswarms; the only two taxa to which it will defer are its congener, the Reddish-winged Bare-eye (*P. erythroptera*), and the Pale-faced Antbird (*Skutchia borbae*), both of which are slightly more bulky.

[*Phlegopsis nigromaculata*.  
Photo: J. S. Dunning/  
Ardea]



*Gymnophithys*. Zimmer has noted that allopreening is a common response to tape playback among mated pairs of some *Cercomacra* species. When responding to playback of male-female duets, females of the Bananal, Mato Grosso, Manu and Rio de Janeiro Antbirds frequently join their mates on a branch and assume the solicitation posture. The bouts of allopreening that follow are nearly always one-sided, with the female as the recipient. Female Bananal Antbirds that have been visually separated from their mates during bouts of tape playback, on being reunited, frequently nibble at the mate's bill for several seconds. Thus, mutual bill-nibbling and allopreening of females by males appear to reinforce pair-bonds in response to potential trespassing by conspecifics.

Stretches usually involve several stereotyped motions, for which Willis used a specific terminology. These include "full side stretches", involving stiff extension of the leg, wing and tail on one side of the body; "two-wing stretches", in which the bird leans forwards while extending both wings above the back; and "toe standing", whereby the bird stands tall, with the foot extended, as it flexes the toes and supports itself on the tips, rather than on the "soles" of the feet.

At times, antbirds regurgitate fragments of chitinous insect exoskeletons and other indigestible materials. These are sometimes compacted into pellets, but more often are not. Excreta are typically white and mostly fluid, and are dropped frequently.

More than 200 bird species, of many families, have been recorded as systematically rubbing live or crushed ants, beetles, centipedes (Chilopoda) and other arthropods through their feathers. These potential prey items are seized with the bill, chewed and shaken repeatedly, and brushed and rubbed through the wings, tail and body feathering, before being eaten or discarded. This behaviour, termed "anting", is generally believed to play a beneficial role in feather maintenance, either by relieving skin irritation related to moult or by reducing the numbers of feather mites, lice and other ectoparasites, or in some cases by performing both functions. Willis has suggested that, alternatively, anting could be connected with foraging behaviour, in which distasteful secretions of the arthropod are rubbed off prior to the food being swallowed. He further suggested that, among obligate ant-following members of the family, anting may be practised mainly by hungry subordinate individuals, which are reduced to catch-

ing less desirable and frequently noxious prey on the fringes of swarms. Antbirds usually wipe the bill vigorously on limbs after anting. Among the *Thamnophilidae*, anting has been reported for five species, the Spotted, Bicoloured, Lunulated, White-breasted and Ocellated Antbirds.

In general, the antbirds, or the majority of the forest-dwelling understorey species, at least, are seemingly photophobic, shunning even small patches of sunlight. A few species have been recorded, rarely, as "sun-bathing", in which the bird pauses in a sunlit spot, with feathers ruffled, wings and tail variably outstretched, and often with one eye turned towards the sun. Such poses are seldom held for more than a minute or two before the bird snaps out of its nearly trance-like state, sleeks its feathers, and moves back into the shade.

Many antbird species have been reported to bathe in shallow pools or along forest streams. Bathing can take place at any time of the day, but may be most frequent in the late afternoon. Bathing antbirds typically stand in shallow water and repeatedly lean forwards and dip the head and body several times while holding the wings and tail at least partly outstretched. After a thorough wetting, the bird usually flies to a horizontal perch in nearby cover and preens vigorously. Antbirds of more than one species which have been attending the same ant swarm (see Food and Feeding) often bathe side by side in the late afternoon at the same forest pool, commonly exhibiting the same types of supplanting, displacement and competitive behaviour as those which accompany their foraging. Arboreal species of the mid-storey, subcanopy and canopy seldom descend to the ground to bathe, but instead bathe in water trapped within the leaves of bromeliads, in hollows of broken limbs or in similar situations high above the ground.

In response to potential danger, some antbirds crouch and freeze, remaining totally motionless for up to several minutes at a time. This behaviour may be most developed among the more terrestrial species, such as the Banded Antbird and the Wing-banded Antbird, both of which have been observed by Zimmer to crouch and freeze for up to ten minutes in response to the observer's presence. In contrast, Willis found freezing to be sustained only briefly by Bicoloured Antbirds and other *Gymnophithys* species, as well as by *Rhegmatorhina* antbirds, among which genera it is generally accompanied by a vocaliza-





The genus *Phaenostictus* is related to the *Phlegopsis* bare-eyes. Indeed, it replaces them in the humid lowland forests of southern Central America and in the Chocó region on the Pacific slope of the Andes in Colombia and Ecuador. The sole occupant of this genus, the **Ocellated Antbird**, is a large and impressive species that dominates ant-following assemblies throughout its distribution. It is often difficult to find because it occurs at low densities and occupies large home ranges, often as much as 1500 m across. Apart from the Black-spotted Bare-eye (*Phlegopsis nigromaculata*), it is the only antbird known to exhibit long-term bonds between parents and offspring. These bonds result in small family groups developing around a successful pair: young males and their mates are tolerated for several years, thus forming patrilineal clans that fragment or fuse as food supplies dictate. Young females typically remain on their natal territories for only one year, after which they disperse to mate outside the clan. The largest clans can contain eight or more individuals, all of which co-operate to defend the territory against rival clans. During disputes over land, clan members bunch together, shoulder to shoulder, in a remarkable display of territorial solidarity.

[*Phaenostictus mcleannani*, Soberania National Park, Panama.  
Photo: Marie Read]



Many species of antbirds, particularly males, have white interscapular patches which are normally concealed beneath mantle feathers. During agonistic displays, however, the overlying feathers are parted and the white feathers are flared as part of an aggressive signal. Set against the shadows and dull hues of the dimly lit understorey, the visual effect of a bright white interscapular patch is striking, as shown here by a male **White-backed Fire-eye**. Most of the time, when this species is relaxed or foraging, the patch is almost invisible.

[*Pyriglena leuconota similis*,  
Cristalino Jungle Lodge,  
Alta Floresta,  
Mato Grosso, Brazil.  
Photo: Edson Endrigo]



tion that he termed "keening", a low-amplitude, faintly whistled "keee". Willis found keening to be a more common response to potential danger when members of a mated pair were together, with the vocalizations sometimes spreading through a flock of birds at an ant swarm and causing all birds to freeze, at least temporarily. The usual stimulus for both keening and freezing seems to be potential but unlocated or distant danger, often signalled by a distant alarm call from some other bird, or by a sudden loud noise.

When danger is close, or is located, many antbirds shift to a mode that Willis has termed "panicking". Panicking is usually signalled by a burst of excited "chip" calls and abrupt flights as the birds dive for cover, where they may continue to call loudly at sporadic intervals. Among the obligate ant-followers (see Food and Feeding), panic often induces a general state of hyperactivity: the birds leap from one perch to another, pitch and yaw on their perches, expressively raise and lower the crown feathers, this being especially true of *Rhegmatorhina* species, and move their wings and tail in species-specific motions (see below). Sudden flights by one individual can induce a "stampede" effect, in which other antbirds explode into frenzied flight.

At other times, the presence of a potential predator may elicit a mobbing response rather than a flight response. Obligate ant-following thamnophilids often respond to the presence of mammals, including humans, with angry, low-frequency "chirring" calls (see Voice). These are often delivered with the tail fanned and the wings held slightly drooped and spread, making the bird appear bigger than it really is. *Gymnopithys* and *Rhegmatorhina* antbirds frequently extend the head and neck, thus presenting the bare facial area to the object of mobbing. While thus engaged, they may swing around and around on a vertical perch, staring directly at the offending mammal. Willis speculated that the large pale "goggle" of the various *Rhegmatorhina* species, being set around a dark eye and surrounded by an otherwise dark face, could, in the gloom of the forest interior, resemble a large eye of a cat or some other predator, and could be effective in frightening some animals away; he noted that the bare patches are particularly prominent when the birds are mobbing and when they are displaying to conspecifics. Willis also noted the cause of "chirring" by Bicoloured Antbirds on 30 occasions, excluding hundreds

of others when the birds chirred at him. Only twice were these calls directed at other bird species, once at a Squirrel Cuckoo (*Piaya cayana*) and once at a Crimson-crested Woodpecker (*Campephilus melanoleucos*). They were directed at coati-mundis (*Nasua narica*) nine times, at tayras (*Eira barbara*) seven times, at capuchin monkeys (*Cebus capucinus*) four times, at humans twice, and once each at an anteater (*Tamandua tetradactyla*), a brocket deer (*Mazama americana*), an ocelot (*Felis pardalis*), a jaguarundi (*Felis yagouarundi*) and feral pigs (*Sus*). In contrast, White-plumed Antbirds directed chirring calls towards mammals, predatory birds, both conspecific and other thamnophilid competitors at ant swarms, and even towards large saturniid moths. Antbirds may shift back and forth from panicking to mobbing, the latter being more persistent from individuals or pairs which have a nest or fledged young nearby.

The presence of a snake often elicits more aggressive mobbing behaviour, in which antbirds not only give persistent loud calls of alarm, but also seemingly attempt to drive the snake from the area by physically harassing it. Zimmer has seen Rufous-winged Antwrens, Grey Antbirds and Dusky Antbirds (*Cercomacra tyrannina*) following arboreal snakes through vine tangles, while repeatedly fluttering at the reptile and giving continuous alarm calls. Similarly, some antbirds also aggressively mob pygmy-owls (*Glaucidium*). In Brazil, for example, the Glossy, Great and Barred Antshrikes, the Planalto Slaty Antshrike, the Plain Antvireo, the Black-capped, Pectoral and Large-billed Antwrens and the Mato Grosso Antbird have all been recorded mobbing Ferruginous Pygmy-owls (*Glaucidium brasilianum*).

Many thamnophilids display stereotyped body motions, involving especially the wings and tail, which are characteristic of the species, of a particular species group, or of an entire genus. For example, many species of antbird habitually "wing-flick" by partially opening and closing the wings rapidly and repeatedly. Tail movements vary in more complex ways, including direction, whether vertical or horizontal, as well as speed, fluidity, the direction of initial movements, the depth or range of movements, and so on. The tail may be moved at the same speed throughout the motion, or one part of the action may be faster than another, and movements can be smooth or jerky. Some species, such as





The **Scale-backed Antbird** is probably misplaced in the genus *Hylophylax*. It differs from its congeners by nature of its plainer body plumage, its tail actions and its loudsong - a series of long, upwardly-inflected, high-pitched whistles, unusual amongst antbirds, but quite similar to the whistles of piping-guans (*Pipile*). This female and male illustrate the propensity of many antbirds to perch laterally, clasp narrow stems, or using their sharp claws to hold on if the stem is too broad to clasp.

[Left: *Hylophylax poecilinotus lepidonota*, Explorama Lodge, Quebrada Sucusari, Peru. Photo: Jordi Bas.

Right: *Hylophylax poecilinotus poecilinotus*, Guyana. Photo: Doug Wechsler/VIREO]

the Black-headed, White-lined, Slender and Bare-crowned Antbirds, the fire-eyes and several members of the genus *Myrmeciza*, perform "tail-pounding", which involves pounding the tail downwards quickly and emphatically and then slowly raising it. Others, including all members of the genera *Gymnopithys* and *Rhegmatorhina*, flick the tail rapidly upwards and then slowly lower it. Other variations include "tail-jerking", in which the tail is first lowered slowly, then jerked abruptly upwards; the "vertical twitch", when the tail is moved rapidly up and down; the "horizontal twitch", with the tail being moved rapidly from side to side; the "vertical wag", a slow and even up-and-down movement of the tail; and the "horizontal wag", a slow and even movement of the tail from side to side. Less common tail motions include the rapid, shallow "quivers" exhibited by most members of the "slaty antshrike complex", and the jerky, side-to-side swinging of the tail demonstrated by Silvered Antbirds and Yapacana Antbirds.

Many thamnophilids exhibit still different body actions when singing, often involving a degree of synchronicity between the motions of the wings, tail and/or body and the notes of the song. Such synchronicity of voice and movement reaches its zenith in the "barred group" of *Thamnophilus* antshrikes, in which a singing bird leans forwards and bows and bobs its entire torso while simultaneously wagging its fanned tail, all in perfect synchrony with the rhythm of the song.

Willis was the first to draw attention to the stereotyped tail and wing motions of antbirds, and to their potential as phylogenetically informative characters (see Systematics). He also documented a wide array of postures and body motions associated exclusively with intraspecific agonistic interactions among the various obligate ant-following species of the genera *Pyriglena*, *Pithys*, *Gymnopithys*, *Rhegmatorhina*, *Phlegopsis*, *Skutchia* and *Phaenostictus*, as well as among some regular ant-followers such as the Black-headed and Scale-backed Antbirds. Intraspecific signals, both physical and vocal, of dominance and submissiveness are probably more highly evolved among obligate and regular ant-followers than in other members of the family, as such mechanisms allow the relaxation of strict territoriality and enable multiple pairs of conspecifics to gather at a single ant swarm (see Food and Feeding). Unfortunately, published descriptions of such agonistic displays, postures and body motions are lacking for the majority of thamnophilid species.

## Voice

For many fieldworkers, the sounds of antbird loudsongs, each distinctive in its proclamation of species identity, serve to epitomize tropical New World forests, and they are especially welcomed by those who wish to locate antbirds and study them. The antbird syrinx is rather basic in construction when compared with that of the oscine songbirds (see Systematics, Morphological Aspects), and the songs of thamnophilids are correspondingly uncomplicated, usually consisting of series of simple notes. Nevertheless, the variety of ways in which notes are shaped into clear whistles or raspy sounds, slowed down, or speeded up into trills seems endless. Birds living in dimly lit habitats can be expected to employ vocalizations extensively for communication, and the antbirds are no exception. Most antbirds can be heard throughout the day and throughout the year, and they seem to be asking and answering such questions, in anthropomorphized form, as "Who are you?" and, especially, "Where are you?", or making statements to the effect "This patch is mine!"

Antbirds deliver a variety of vocalizations, but the function or, more likely, functions of each are poorly understood. Most apparent in the field is the loudsong, a term coined by Willis, referring to the ringing series of notes that is more broadly described as song, in other words, multi-noted vocalizations delivered in a stereotyped pattern. Loudsongs are heard in a variety of contexts, from which their functions may be deduced, although with caution. Some species, such as the Plain-winged and Mouse-coloured Antshrikes, give loudsongs when the mates are foraging at a distance from one another; usually, the male sings first and the female answers, suggesting that loudsongs may be used by pair-members to maintain contact, although, as noted below in the discussion of duets, responsive singing may also reflect joint territorial defence. Other species, such as the Cinereous and Bluish-slate Antshrikes, leaders of understorey mixed-species flocks (see Food and Feeding), rarely deliver loudsongs except when neighbouring flocks meet at a common boundary, more clearly suggesting a purely territorial function. Sometimes, the use of loudsongs to proclaim territories appears even more obvious, as exemplified by a male Black-crested Antshrike in the Venezuelan llanos observed by Isler and Isler to make a rapid traverse of its territory every day at dawn, stopping every 5-10 m or so to deliver a loudsong or two. Although antbirds often de-



liver loudsongs when neighbouring pairs of the same species approach one another near their mutual territorial boundary, other types of vocalization are also given in this context.

Males and females of most thamnophilid species deliver similarly patterned loudsongs. Despite assertions made by some authors, it is not always the case that, when the two sexes give near-identical loudsongs, that of the female is constantly higher-pitched than the male's. Although females of some species do deliver their loudsongs at a higher pitch than that of their mates, females of others sing at the same pitch as the male, and still others at a lower pitch. Sometimes, there is a sexual difference in change of pitch; for example, the notes of the male Uniform Antshrike's loudsong are maintained at the same pitch, whereas the female's notes typically rise in pitch. Most often, female loudsongs are shorter in duration, with fewer notes, than those of the male; again, however, there are exceptions, such as the female Ochre-rumped Antbird, the songs of which contain many more notes than do those of the males.

Typically, the female's loudsong follows the male's, although her timing of delivery varies among species, a character that may be significant for phylogenetic studies. In some genera, such as the *Thamnophilus* antshrikes, males and females seem to deliver their loudsongs without temporal synchronicity, the female responding to the male after a somewhat variable time interval. In other genera, such as the *Hypocnemis* antbirds, the female starts her loudsong just before the male's ends, and, because this occurs in a constant stereotyped pattern, these songs are considered duets. In more complex duets, such as those exhibited by the Jet Antbird and certain other *Cercomacra* species, vocal cues are given by the female during the course of the male's loudsong which cause the male to change his vocalization and begin a duet. In another group of *Cercomacra* antbirds, exemplified by the Blackish Antbird (*Cercomacra nigrescens*), male and female loudsongs overlap in timing of delivery but differ so greatly that one would hardly guess that they were given by the same species, except that the female begins her song while the male is singing. Ferruginous-backed Antbirds also have distinct male and female songs, but without overlap in delivery, making the connection more difficult. Nevertheless, the usual case is, as with

most *Drymophila* and some *Myrmeciza* antbirds, that the male and female songs are similar structurally but with just enough variation in pace, pitch, number of notes and similar parameters to be recognizable by sex.

It is unclear whether duets are a manifestation of co-operation and bonding between pair-members or an expression of joint territorial defence. At face-to-face conflicts between conspecific neighbours at territorial borders, males confront one another and females respond to females, but in these circumstances, as mentioned above, other types of vocalization besides loudsongs may be used by both sexes.

The term "loudsong" is used to distinguish different vocalizations that fit the general definition of a song. Since antbirds are typically paired for life (see Breeding), it is a rare event when an unpaired individual with an established territory delivers a song to advertise for a mate. In a pioneering experiment involving paired Dusky Antbirds, E. S. Morton temporarily removed each sex in turn from the territories. After removal of the mate, the remaining individual delivered a somewhat different song: males accelerated the pace of their normal loudsongs, a trill, into a long rapid twitter, and females typically combined the trill of the male with the rising series of whistled notes characteristic of their own normal loudsongs. Morton termed these vocalizations "courtship songs". From the standpoint of using loudsongs in systematics, it is useful to record that the structure of the notes used in Dusky Antbird courtship songs is essentially the same as that in loudsongs, even though other vocal characters are modified.

Some antbirds deliver more than one loud, stereotyped vocalization, and in such cases it may be difficult to decide which should be considered a loudsong. For example, both sexes of the Guianan Streaked Antwren and the Amazonian Streaked Antwren deliver a stereotyped rattle-like series of notes, as well as a more pleasant, stereotyped series of whistles that rises and falls in pitch. Isler and colleagues, in an analysis of species limits (see Systematics), considered the rattle-like series to be the loudsong; this was because loudsongs of two closely related species, the Pacific Antwren (*Myrmotherula pacifica*) and Cherrie's Antwren, also consist of a rattle-like series, and these

Antbirds occur almost wherever wooded habitats are found in South and Central America. Unlike the Furnariidae, however, they are absent from forests at high altitudes (e.g. Polylepis), and at high latitudes (e.g. Nothofagus). Some species, including the **Giant Antshrike**, occupy different habitats in different portions of their ranges. In south-east Brazil, for example, it occurs in humid forests from sea-level to the high mist-shrouded ridges of the Serra do Mar. Far to the west, in the Andes of northern Argentina and Bolivia, it is restricted to dense montane forests. In the intervening lowlands, however, it inhabits the stunted woodlands of the semi-arid Chaco.

[*Batara cinerea cinerea*,  
Fazenda Intervalles,  
São Paulo, Brazil.  
Photo: Edson Endrigo]







Antshrikes in the "barred group" of the genus *Thamnophilus* usually shun the interior of tall forest. Although some will enter low-stature forest, particularly where it is dry or more tangled, most occupy bushy country or forest borders. In the eastern portion of its range, the **Rufous-capped Antwren** is typical in being a bird of low, dry scrub, brushpiles, patches of low woodland and impenetrable thickets on brushy grasslands. Its habitat preferences are variable, however. It occurs from sea-level in the east, to 3050 m in the Andes, where it is sometimes found in the dense understorey of humid montane forest.

[*Thamnophilus ruficapillus* *ruficapillus*, Misiones, Argentina. Photo: José & Adriana Caloj]

species did not have the equivalent of the rising and falling series in their vocal repertoires.

In the "stipple-throated assemblage" of *Myrmotherula* antwrens (see Systematics), a second, distinct song is used in ritualized confrontations in which individuals face each other about 30 cm apart, lower the head, fluff out the back plumage, and pivot from side to side, vocalizing incessantly. All eight member species of the assemblage are thought to employ these displays, a fact which supports their monophyly.

Additional examples of species with two or more stereotyped vocalizations that fit the definition of songs include the Black-crested Antwren and some other *Sakesphorus* species, the Black-hooded (*Thamnophilus bridgesi*), Black and Cocha Antwrens in the genus *Thamnophilus*, the Plain Antwren and other *Dysithamnus* species, the White-fringed and Rusty-backed Antwrens, the Streak-capped Antwren and the Warbling Antbird. In the cases of the *Thamnophilus* antshrikes, the second vocalization consists of the repetition of a single note in variable-length series and, as such, resembles the "Softsong" of congeneric species.

The softsong, sometimes called the "faintsong" or "subsong", is another distinct type of song, given by paired individuals in close proximity. Softsongs, because of their low amplitudes, are recorded by human observers less often than are loudsongs. Those of some species consist simply of a monotonous repetition of the same note or combination of notes, but in other species they take the form of a more complex pattern of notes. The functions of softsongs are unknown; they could serve to maintain pair-bonds, but it appears that their functions are more complex. For example, Willis found that the Bicoloured Antbird, during the process of "nest-showing" (see Breeding), delivers a form of the softsong that rises and falls in both pitch and acceleration; he termed it "serpentine song".

It is difficult to communicate effectively in words a description of an antbird loudsong. These songs are better portrayed by using the same vocal measures as those employed in systematic studies. Thus, it is more useful to describe whether the rate of delivery, or the pace, accelerates or decelerates, how the frequency of the notes, or the pitch, changes to human ears, and how the

loudness, or intensity, shifts. Series of loudsong notes are often described as "countable" or "uncountable"; these terms provide a rough guide to the overall rate of delivery, as expressed by the ease with which the human ear can count the number of notes. Rapidly delivered songs, with the notes impossible to count, are often referred to as rattles, rolls and trills. A rattle can be defined as a rapid succession of low-pitched, harsh, grating notes; a roll is also low-pitched, but less harsh; and a trill is a higher-pitched piping series, generally more pleasing to the ear than is a rattle or a roll. Although it is considered helpful to give the number of notes, and the length in seconds, of one example of a species' loudsong, it is important to realize that statistical measures of an adequate sample of vocalizations have not been computed for most thamnophilid species. Examples should, therefore, be treated with a degree of caution.

Vocalizations other than songs are generally lumped into the catch-all category of "calls". Antbird species have multiple calls in their repertoires, but these are typically difficult to define precisely because the same basic type of note may be varied. For example, a downslurred note can be given clearly, as a whistle, or it can be frequency-modulated, with overtones that make it sound harsh. The number and complexity of thamnophilid calls are such that they are generally beyond the scope of simple verbal description, and only the most common are usefully transcribable. The variety of calls of ant-following species has, however, been described in detail in a number of papers by Willis.

Calls are frequently distinctive, and potentially useful in phylogenetic studies. For example, a call consisting of a "bark" followed by a rattling roll is given by the Collared Antwren and the Western Slaty Antwren, in the respective genera *Sakesphorus* and *Thamnophilus*, and it remains to be determined whether the vocal similarity of these distinctive rattles is a result of a common ancestry or of convergence. Single-noted calls can be equally informative. The crow-like "caw" of antshrikes in the genera *Thamnophilus* and *Sakesphorus* is learned quickly by novice fieldworkers, and its occurrence in antshrike repertoires may prove to be useful in establishing relationships of species in the two genera. The calls of some closely related species, such as the



Whereas some races of the **Blackish-grey Antshrike** are restricted to seasonally flooded evergreen várzea and igapó forest along rivers, others variously occupy mangroves, dense second growth around clearings, or savanna woodland. Some of these habitat shifts might reflect underlying genetic differences between populations. The race *cinereoniger* is particularly plastic in its habitat preferences, occupying flooded forest on river islands and along river margins, as well as stunted, dense savanna woodland growing on white-sand soils.

[*Thamnophilus nigrocinereus cinereoniger*, Anavilhanas Archipelago, Rio Negro, Amazonas, Brazil.  
Photo: Arthur Grosset]



Plain-winged and Mouse-coloured Antshrikes, are more easily distinguished than are their loudsongs.

Obligate ant-following species, when foraging over army-ant swarms, often deliver a distinctive "chirr", a harsh, vibrant note of about 0.25-0.5 seconds' duration that drops slightly in pitch and intensity. The chirrs of other species, often heard when an observer turns a corner on a trail and comes across an antbird, are described by some as an "annoyance" call, but they may just as easily be warnings of possible danger (see General Habits).

The functions of calls seem to overlap at least some of the apparent functions of loudsongs. They may, for example, serve to maintain contact between pair-members. With the exception of Willis's studies of ant-following species, however, there has been virtually no investigation of thamnophilid calls, even though they appear to offer important insights into the behaviour, as well as indicators of the phylogeny, of the members of this family.

Assertions that antbird vocalizations can be used in defining species limits, and possibly in higher-level taxonomic studies as well (see also Systematics), are based on the assumption that the vocalizations are innate and, therefore, reflect genetic differences among populations. The foundation for this assumption lies largely in studies of another suboscine family, the Tyrannidae, conducted by D. E. Kroodsma and his associates. The proposition that the same applies also to the Thamnophilidae is supported by an absence of evidence of vocal learning typical of oscine songbirds. For example, no dialectal differences in loudsongs can be found over vast portions of the geographical ranges of widespread antbirds, such as the Barred Antshrike. That is not to say, however, that antbird vocalizations are without intraspecific variation. In a study of the Spotted Antbird at a 100-ha site in Panama, S. C. Bard and associates found a degree of vocal variation which allowed individuals to be recognized by voice alone, and the same result was obtained by Morton and colleagues in an as yet unpublished study of the Dusky Antbird. Furthermore, song pace, an important vocal characteristic, appears to vary geographically, possibly in a clinal fashion in the case of some species, such as the White-flanked Antwren and the Black-faced Antbird, although it is not known whether such variation is congruent with genetic differentiation

at the same geographical scale, a subject currently under study. When using vocal characters in systematic studies of antbirds, the possibilities of individual and geographical variation demand adequate sample sizes and geographical coverage.

### Food and Feeding

All antbirds feed primarily on a wide variety of insects and other arthropods, including spiders, scorpions, centipedes and isopods. Orthopterans, including katydids, crickets and grasshoppers, along with cockroaches (Blattodea), mantids (Mantidae) and stick-insects (Phasmida), seem to be preferred prey items for many species, as do lepidopteran larvae, beetles and spiders.

In a study of the dietary consequences of substrate specialization for six species of Amazonian antwren, K. V. Rosenberg found that the diet composition of all six was qualitatively similar, with orthopterans representing the most important prey type. This study included two antwrens which forage on live leaves, three dead-leaf specialists, and one species, the Plain-throated Antwren, which is a substrate generalist. The three dead-leaf specialists, the Ornate, Stipple-throated and White-eyed Antwrens, took prey, other than the preferred orthopterans, roughly in proportion to their availability in dead leaves. In contrast, the diets of the White-flanked and Long-winged Antwrens, the two live-leaf foragers, bore little relation to the prey availability on live leaves; these species selected orthopterans, beetles and larvae more than would be expected on the basis solely of prey availability.

Rosenberg also conducted prey-selectivity experiments on captive antwrens placed in outdoor enclosures. Individuals of each foraging group exhibited similar degrees of selectivity from twelve prey categories offered to each species. All individuals readily captured and consumed cockroaches, spiders, crickets and small katydids, as well as dragonflies (Odonata) and butterflies. Larger katydids were usually captured immediately, but required substantial handling time before being killed and consumed. Hard-bodied or brightly coloured grasshoppers either were eaten after initial hesitation or were rejected. Conversely, nearly all ants,





The eight species currently constituting the genus *Dysithamnus* are all birds of humid forest. Some live in the lowlands while others, including the **Rufous-backed Antwren**, are restricted to higher altitudes. This species, possibly the most attractive member of the group, lives in montane evergreen forest and old second growth between 750 and 1700 m in the mountains of south-east Brazil. It is easily found in a few Brazilian national parks, including Serra dos Órgãos and Itatiaia, where these forests are well protected.

[*Dysithamnus xanthopterus*, Pico dos Marins, São Paulo, Brazil. Photo: Edson Endrigo]

flies and wasps and most beetles and heteropteran bugs were ignored or rejected. Harvestmen (Opiliones) were also ignored by all three species of antwren to which they were offered.

Field observations suggest that many thamnophilids are even more specialized in their prey preferences than the preceding examples would suggest. For example, the Manu Antbird, a bamboo specialist, has been observed to take mostly small lepidopteran larvae, while many terrestrial-foraging species and army-ant followers consume particularly large numbers of crickets, cockroaches, sowbugs (Isopoda) and spiders, and the Silvered, Band-tailed and Black-chinned Antbirds all take large numbers of aquatic insects. In each of these cases, however, it is not known if the birds are demonstrating a specialized preference or are merely taking prey in proportion to their abundance in a given habitat.

Many antbirds, even small antwrens, seem capable of eating relatively large arthropods. Larger prey items represent greater caloric rewards but often come at the cost of increased handling time, particularly for the smaller members of the family. Many antbird species will repeatedly bash larger arthropods against branches before using the bill to remove the prey's wings, legs or urticating spines in methodical fashion. The wings of moths, butterflies, dragonflies and larger orthopterans are routinely clipped, and, in some cases, veritable dissections are made of the other appendages and body segments. Many species habitually wipe the bill on a branch following prey consumption. At times, antbirds may show initial interest in large prey items that ultimately prove too big or too dangerous to handle. In the prey-selectivity experiments, Rosenberg found that captive White-flanked Antwrens ate only two of six katydids that were greater than 30 mm in length, and that Long-winged Antwrens did not attack any of four katydids larger than 25 mm. In those instances when they did not eat the katydids, the birds usually showed great initial interest in the food but either were hesitant to attack or seemed physically incapable of grabbing and subduing the prey. A. F. Skutch reported a case of a female Dusky Antbird being deterred from attacking a spider that was too large. When the antbird found the spider, which measured about 5 cm across its spread legs, clinging to the underside of a leaf, it cautiously stretched its neck forwards in an attempt to seize the

arachnid with its bill; in response, the spider reared back and waved its front legs in an aggressive display, which was enough to make the bird withdraw and give up.

Several thamnophilid species have been found regularly to eat snails and slugs. This is especially true of a number of the large Atlantic Forest antshrikes, including the Giant, Spot-backed, Tufted and Large-tailed Antshrikes. Great Antshrikes and Wing-banded Antbirds are among the more widespread species that also regularly eat gastropods.

Many more antbirds are known to take small vertebrates, at least occasionally. Such prey consist mainly of small lizards, mostly *Anolis* species though also geckos, but they also include frogs and snakes. As would be expected, this behaviour is especially common among many of the antshrikes, the larger and more hooked bill of which is well equipped for handling vertebrate prey. A male Giant Antshrike in Rio Grande do Sul, in south-east Brazil, was observed to dislodge a large tree-frog (*Hyla*) from a perch several metres above the ground. The frog, which had an estimated body length of 8 cm, and legs much longer than that, jumped to the ground, whereupon the antshrike immediately dropped half the distance to the ground, scanned for a second and then pounced on the frog, skewering it with its massive bill; it then bashed the frog several times on the ground, before swallowing it. The speed and efficiency with which the antshrike dispatched such a relatively large and mobile prey item was impressive, indeed. Small frogs and lizards are also captured on occasion by smaller antbirds. The Black-headed Antbird has been found to take lizards up to 7 cm in length, as well as small snakes. Immaculate, Chestnut-backed, Bicoloured, Spotted and Scale-backed Antbirds are among the other non-antshrikes known to take reptiles and amphibians. In Rosenberg's prey-selectivity experiments discussed previously, captive White-flanked and Plain-throated Antwrens captured and consumed lizards 5 cm long, whereas Ornate Antwrens would not eat small lizards. It is not known whether such small thamnophilids would take vertebrate prey under natural conditions.

Small snakes are probably taken regularly only by the larger species of antshrike, such as the Giant, Large-tailed and Tufted. The Giant Antshrike is also known to have taken small rodents, and all three of those species have been reported to steal eggs and



nestlings from nests. Collared Antshrikes are regularly mobbed by small birds such as hummingbirds (Trochilidae), grassquits (*Tiaris*) and seedeaters (*Sporophila*), which suggests that they, too, may at least occasionally prey on nests. Great Antshrikes have also been recorded as preying on small rodents. In the Pantanal region of Brazil, Great Antshrikes regularly forage in drying marshes, where they use the leaves of water hyacinths as platforms for extracting tadpoles and minnows from the water.

Some antbirds include fruit or other vegetable matter in the diet. The Variable Antshrike, the Spot-breasted Antwren (*Dysithamnus stictothorax*), the Rufous-backed Antwren (*Dysithamnus xanthopterus*) and the Rufous-winged Antwren have all been found to consume berries of mistletoe (Myrsinaceae: *Rapanea*). A pair of Variable Antshrikes in south-east Brazil was observed feeding on *Melastoma* fruits, which they severed at the base and swallowed, after which the birds regurgitated a papery skin or husk. Barred and Black-crested Antshrikes have been observed to eat the fruit of capsicum (*Capsicum*), as has the Russet Antshrike, and small fruits have been found among stomach contents of Fasciated Antshrikes, Guianan Streaked Antwrens and Black-headed Antbirds. The stomach contents of one Bar-crested Antshrike contained seeds of pomegranate (*Punica granatum*), and various unidentified seeds have been found in the stomachs of Barred, White-bearded and Great Antshrikes and of Chestnut-backed and Wing-banded Antbirds.

Thamnophilids employ a wide range of foraging techniques to secure their predominantly arthropod prey. The majority of species are arboreal, and, although antbirds are most common in the understorey, many occupy the middle storey. A few, particularly *Terenura* and *Herpsilochmus* antwrens, the Russet, Spot-winged and Fasciated Antshrikes, and the Pygmy, Moustached, Yellow-throated (*Myrmotherula ambigua*) and Sclater's Antwrens (*Myrmotherula sclateri*), can be found in the canopy, 25 m or more above ground.

Most species perch-glean arthropods from live leaves, stems, vines or branches. Some will glean prey primarily from the tops of leaves and others mainly from the undersides of overhanging leaves, and still others will utilize all surfaces. Most antshrikes are somewhat generalized gleaners, moving through foliage with heavy hops, and pausing for anything from several seconds to up to a minute or more between hops, during which time they actively scan for prey. Food items, once spotted, are usually seized by reaching or by short lunges. Some antshrikes, such as the Plain-

winged Antshrike, and many smaller thamnophilids, particularly the antwrens, glean prey mostly in short, fluttering or hovering sallies to vegetation. Several terrestrial species, such as the White-bibbed Antbird and the Squamate Antbird, employ a variation in which they walk along the forest floor, periodically jumping upwards to take prey from the undersides of overhanging leaves. Many of the antwrens are particularly acrobatic, often hanging head downwards from the tips or margins of leaves or from leaf petioles, or clinging to the undersides of large leaves, in their attempts to scan vegetation and secure prey. In general, the smaller species, such as the antwrens and antvireos, tend to be more active and faster-paced in their foraging, spending less time pausing and scanning between movements than do the larger species. Many of the more active species habitually flick their wings in a shallow arc as they forage, possibly to startle cryptic prey into moving and, thereby, revealing their presence. Once dislodged, certain prey, particularly orthopterans such as katydids and grasshoppers, will jump or fly rapidly downwards for several metres in an attempt to evade capture. In response, many antbirds engage in equally abrupt, fluttering pursuits, often through several layers of vegetation.

A few members of the family obtain insects primarily by making longer-distance sallies to vegetation or into the air. The Speckled, Pearly, Dusky-throated and Saturnine Antshrikes all attack prey chiefly in quick, darting sallies to vegetation, although they sometimes make short looping sallies to take prey from the air. The Cinereous and Bluish-slate Antshrikes are extreme examples of aerial hawkers within the family. Like many tyrant-flycatchers, they perch upright, constantly scanning, and then sally for distances of 1-5 m, or occasionally up to 10 m, to snatch prey from the air or from vegetation. These more specialized long-distance salliers are core members of mixed-species flocks, and often feed opportunistically on insects flushed by other, more actively moving flock-members. Band-tailed and Black-chinned Antbirds, which normally feed along streambanks and margins of flooded forest, have been observed to make repeated steep diagonal sallies from branches or vines to seize aquatic insects from the water's surface, much in the manner of tiny kingfishers (Alcedinidae).

Many understorey antbirds are adapted for clinging laterally, with the top leg flexed and the bottom leg extended, to thin vertical saplings and similar perches that often predominate in the shaded forest interior. From such vantage points, usually within

Several species of antbird are adapted to life on the constantly shifting river islands in lowland Amazonia. They are so particular in their choice of habitat that they are rarely found on adjacent mainland. Although the **Leaden Antwren** often joins the select community of antbirds on river islands, it cannot strictly be called a "river-island specialist", as it also occurs in the seasonally or permanently flooded forests bordering white-water rivers (várzea forest) and black-water rivers (igapó forest). When it occurs on islands, it tends to occupy mature forest, while other species specialize on younger regrowth.

[*Myrmotherula assimilis*  
assimilis,  
Marchantaria Island,  
Brazil.  
Photo: Arthur Grosset]





a metre of the ground, they may scan surrounding foliage as well as the floor, and often pounce on prey from above before hopping back up to another perch. The Band-tailed and Black-chinned Antbirds, in addition to employing the sallies described above, more often cling to overhanging vines or branches just above the surface of small streams, from where they reach downwards to pick prey from the water's surface or from the algal scum that clings to partially submerged branches, logs and plant stems at the waterline.

A few, largely terrestrial antbirds forage mainly for arthropods concealed in the leaf litter. They methodically turn over or toss leaves, either by grasping the leaf in the bill or by inserting the bill beneath the leaf and brushing it aside with a rapid sweeping motion. In many instances, the leaves being thrown are larger than the bird itself. This foraging technique is identical to that used by leaf-tossers (*Sclerurus*), members of the Furnariidae. The Wing-banded Antbird is probably the most habitual leaf-tossing thamnophilid, using its bill as a tool to push the leaves, rather than grasping and throwing them. Individuals have been observed to spend more than 30 minutes continuously tossing leaves within an area no more than a few metres in diameter. This specialized foraging behaviour is reflected in that species' diet, which is known to encompass a variety of leaf-litter organisms, including crickets, cockroaches, sowbugs, gastropods and even millipedes (Diplopoda), the last a seemingly noxious prey type that is usually avoided by most antbirds. The Scalloped Antbird of eastern Brazil and the Caura Antbird, a Guianan Shield endemic, also employ leaf-tossing as a major part of their foraging repertoires, although neither species is so dependent on this technique as is the Wing-banded Antbird. Most of the ant-following species and antshrikes that follow escaping prey to the ground will toss leaves in direct response to the sight of an arthropod moving beneath a leaf to hide, but this appears to be an opportunistic response rather than a regular search behaviour. Other antbirds obtain a substantial proportion of their food from leaf litter without tossing leaves. They either probe beneath litter with the bill, or seize items from the surface, often by pouncing from above-ground perches.

In addition to leaf-tossing, the Caura Antbird has evolved a foraging method that is seemingly unique among the Thamnophilidae. In the only known study of the species, K. J. Zimmer found that Caura Antbirds made liberal use of the boulders that

seem to be an integral part of their habitat (see Habitat). Much of their foraging time was spent in creeping over large boulders, often clinging laterally to nearly vertical rock faces, and exploring large crevices and inspecting narrow fissures in the manner of Rock Wrens (*Salpinctes obsoletus*) and Canyon Wrens (*Catherpes mexicanus*) of North America. While creeping about on rocks, the antbirds frequently probed in mosses and small ferns covering the surface, but they spent most of their time inspecting the leaf litter trapped between the roots and vine tangles of trees overtopping the rocks. They routinely squeezed themselves into small spaces between the rock surfaces and overlying roots and vines, remaining in these somewhat "canopied" niches to forage for up to a minute or more at a time. When seeking food on rocks, the antbirds tended to spend most of the time in somewhat protected locations, within the interior of vine tangles and root-masses overtopping the rocks, within crevices in the rocks, or beneath rocky ledges and overhangs. Caura Antbirds spent more than 80% of their foraging time on rocks and overtopping vegetation or on the ground directly beneath overhanging rocks. Zimmer's study was conducted in February, during the dry season. The importance of rocks as foraging sites may be increased in dry periods, when favourable moisture-retaining micro-climates are created along rock edges or crevices. Furthermore, the tendency for overtopping root-masses and vine tangles to trap leaf litter is accentuated during the dry season, when many trees drop their leaves. Such accumulations of organic litter may provide attractive sites for arthropods when the forest is water-stressed. It is interesting that no other bird species was observed to exploit the extra resource dimensions created by the large rocks at the Venezuelan study site.

As might be expected from their peculiar bill shapes, the three bushbirds in the genera *Neotantes* and *Clytoctantes* appear to have evolved some highly specialized foraging techniques that may set them apart from other antbirds. Detailed information is available only for the Black Bushbird, but all three species seem to be birds of vine tangles, treefalls and dense thickets, and the few foraging observations for the other two bushbirds appear to be consistent with those for *Neotantes*. The Black Bushbird occasionally probes in suspended, curled dead leaves, or picks at vine and branch surfaces, but much of its foraging involves sub-surface manoeuvres. It uses its bill to hammer repeatedly at a



A large proportion of antbirds are restricted to the shady understorey of humid forest. Many of these forest-floor species so rarely cross openings, and so avidly avoid even small patches of sunlight, that they are suspected to be photophobic. One such species is the **Dull-mantled Antbird**; it lives in the understorey of wet evergreen forest, primarily in damp ravines and on slopes bordering streams, especially where treefalls have resulted in a dense, herbaceous understorey.

[*Myrmeciza laemosticta laemosticta*, Braulio Carrillo National Park, Costa Rica. Photo: Kevin Zimmer]



Many antbird species, long known from specimens but almost unknown in life until recent years, have proven to be nearly restricted to habitats growing on white-sand soils. Within these sandy soil formations, many antbird species occupy a variety of micro-habitats.

**Cherrie's Antwren**, for example, occurs in stunted, poorly drained woodland on white-sand soils, as well as in dense copses and palm-filled borders of seasonally flooded gallery forest in savanna regions. In more humid regions, it ranges from shrubby thickets and borders of streams into adjacent taller várzea forest at ecotones.

[*Myrmotherula cherriei*,  
Junglaen Camp,  
Amazonas, Venezuela.  
Photo: Kevin Zimmer]



branch, woody vine, palm rachis or rotten log until a hole is opened. It then uses its chisel-shaped bill as a wedge to pry loose strips of live bark or stem fibres, or to flake off dead bark, after which it picks repeatedly at small subsurface prey, which are swallowed without special manipulation. Individuals have been seen to feed in this manner at a single station uninterruptedly for ten minutes or more. The Recurve-billed Bushbird (*Clytoctantes alixii*) and the Rondonia Bushbird (*Clytoctantes atrogularis*), each of which has an even larger, more wedge-shaped bill than that of the Black Bushbird, have also been seen hammering at woody vines or stripping plant fibres from heavy stalks.

Antbirds have proven to be opportunistic foragers, as well. A pair of Planalto Slaty Antshrikes in Mato Grosso, Brazil, was observed while foraging in the understorey of an area of humid forest that had just been burnt. The antshrikes clung to charred saplings at less than 1 m above the ground, and pounced on subsurface arthropods that emerged from the still smouldering topsoil. On Barro Colorado Island, Panama, Western Slaty Antshrikes have been reported as regularly gleaning items from the insect screens of buildings, the insects apparently remaining after having been attracted by artificial lighting at night. More remarkably, Barred Antshrikes have been known to attend feeding stations in Venezuela, and to visit houses on the island of Tobago in order to take soaked bread. A most unusual event was reported by Skutch, concerning a Bicoloured Antbird that repeatedly followed him on walks through the forest, using him as a "beater" to flush insects. Over a 16-month period, the bird would tag along at the ornithologist's feet, waiting patiently as he used a stick to stir up arthropods and small frogs from the leaf litter; the antbird then pounced on and consumed the food. So tame was this individual that Skutch was able to stroke it lightly with his stick without causing the bird to fly. Skutch had similar experiences with a few other Bicoloured Antbirds that foraged opportunistically at his side, but none so prolonged and predictable as with the first bird, which he had named "Jimmy", a contracted version of *Gymnophis*.

One of the most conspicuous avian phenomena of tropical forests is the mixed-species foraging flock. These flocks form shortly after dawn and persist until late afternoon, day after day,

throughout the year. Antbirds are key components of understorey mixed-species flocks of insectivores and, to a much lesser extent, of similar flocks that roam the forest canopy. These flocks, regardless of geography, share certain common properties. First and foremost, each flock contains a core of species the territories of which coincide exactly. This common territory thus defines the territory of the flock. Membership of the flock is typically limited to a single pair, or a single family of adults with fledged young, per species. Territorial defence is communal, with boundary disputes arising only when neighbouring flocks meet; aggression is then directed only towards conspecifics, but, because the territories of core flock-members coincide, this means that several pairs of birds of different species are likely to be defending their territories at the same place and time. Core flock-members also nest within the jointly held flock territory, and fledged young join their parents in foraging with the flock. Among core species, flock membership is constant, with the same individuals foraging together day after day. Flocks typically contain a variable number of non-core species, the membership of which is not constant.

The exact mechanisms that maintain the cohesion of different species within stable flocks are not perfectly understood. It is thought that flock cohesion relies heavily on so-called "nuclear species" that attract other "attendant species". These nuclear species are thought to promote both the formation and the maintenance of mixed-species flocks through the conspicuous nature of their calls, coloration or behaviour. It has been demonstrated that flocks which lack such conspicuous species are less stable and more likely to dissolve than are those in which these species are present.

Much of what is known of mixed-species flocks is based on field studies by C. A. Munn and J. W. Terborgh, who worked at Cocha Cashu Biological Station, in Manu National Park, Peru, although their work was both preceded by and followed by studies by other ornithologists working at locations in Central America, Amazonia, the Guianas and south-east Brazil. Munn and Terborgh found that two *Thamnomanes* species, the Bluish-slate and the Dusky-throated Antshrikes, served as nuclear species in the understorey mixed flocks of insectivores at their study



sites. Both antshrikes are active and noisy, giving loud, distinctive calls repeatedly throughout the day. These calls seem to provide a rallying cry for the other flock-members as the flock assembles each morning, and serve to signal the movements of the flock throughout the day. They are very different from the two antshrikes' loudsongs, which are given primarily at territorial boundaries when two or more flocks come into contact. Munn and Terborgh found that the calls of the antshrikes often directed the flock's movements: frequently, an antshrike would move to and call from a spot 20-30 m away from the flock, with the almost invariable result that other flock-members would follow. At Cocha Cashu, the Bluish-slate Antshrike seemed to be the more important of the two, by virtue of its louder, more insistent calls and higher foraging position. Where Bluish-slate Antshrikes were absent, however, those authors noted that flocks with virtually the same composition still formed around pairs of Dusky-throated Antshrikes.

It is now recognized that, throughout most of the Amazonian and Guianan lowlands, one or two species of *Thamnomanes* antshrike are the leaders of most understorey flocks of insectivores. In south-east Peru and adjacent northern Bolivia and western Brazil, the Bluish-slate Antshrike and the Dusky-throated Antshrike play this role, as described for Cocha Cashu. Elsewhere, the Cinereous Antshrike replaces the Bluish-slate as the primary flock-leader, with either the Dusky-throated or its counterpart, the Saturnine Antshrike, taking the less conspicuous and seemingly less important secondary role. Both of the last two species forage lower in the understorey, and give calls that are less far-carrying and less insistent than the noisy "machine-gun" chatters of the more conspicuous Cinereous and Bluish-slate Antshrikes. It has been noted that, where two species of *Thamnomanes* occur in the same flock, they tend to forage at different, although slightly overlapping, heights. Where Cinereous Antshrikes occur in the absence of either Dusky-throated or Saturnine Antshrikes, they often forage at lower levels than they do when one of the other two is present.

The members of a mixed-species flock come together shortly after dawn, seemingly drawn to the location calls of the *Thamnomanes* antshrikes. Soon thereafter, they begin foraging. The main understorey flock studied by Munn and Terborgh moved at an average rate of 60 m per hour, although the pace of any given flock can vary considerably. Foraging continues through-

out the day, although frequently with something of a lull in the middle of the afternoon; by late afternoon, activity slows markedly. On the basis of morning assembly patterns, Munn and Terborgh considered that flock-members at Cocha Cashu roosted separately. Only once were they able to follow individuals to roosting places, when a pair of Dusky-throated Antshrikes roosted within 70 m of the spot where the flock assembled on the following morning. They found that flocks fragmented gradually in the late afternoon, as species left, one by one, for their respective roosts. By contrast, J. Gradwohl and R. Greenberg, working with mixed-species flocks in Panama, where *Thamnomanes* antshrikes are absent, discovered pairs of their two nuclear species, the Dot-winged Antwren and the Checker-throated Antwren, roosting in the same tree on all eight occasions on which roosts were observed. Moreover, they found that many of the attendant species, including the Western Slaty Antshrike and the White-flanked Antwren, also roosted in the same tree or within 15 m of the two nuclear species. In one flock, the Western Slaty Antshrike usually slept on the same branch as the Checker-throated Antwrens.

As previously stated, territorial conflicts arise when two flocks encounter each other. The nuclear species are usually the first to engage in confrontation with their counterparts in the other flock, this time giving loudsongs, rather than the calls that normally direct flock movements. Other flock-members become involved, but only to the extent that they are engaged by their "mirrors" in the neighbouring flock. Territorial vocalizations are often accompanied by posturing and physical displays, as conspecifics of several species face each other. Species not represented in the neighbouring flock continue foraging, waiting for the action to cool down and for the flock to move on.

Aggression within flocks is rare, probably mainly as a result of lack of intraspecific competition. Although core species of understorey flocks are all insectivores, competition is muted in a number of ways. Typically, member species vary considerably in size, from the largest woodcreepers (Dendrocolaptidae) to the smallest antwrens and tyrant-flycatchers, and this variation is possibly accompanied by a corresponding variation in the preferred types and sizes of prey. Within a group of similarly sized relatives, such as *Myrmotherula* antwrens, differences in foraging height, foraging technique and substrate use may allow a partitioning of resources that reduces competition, although D. F. Stotz, in a study of antwren foraging behaviour at three Amazonian sites and one in the Atlantic Forest, found such differences to be fewer than expected. A full understanding of how so many similar species co-exist is still to come. In the Peruvian study of Munn and Terborgh, the seven *Myrmotherula* species differed as follows. Plain-throated Antwrens foraged much lower than all other antwrens, at a mean height of 0.3 m above ground, whereas Pygmy Antwrens foraged mostly in vine tangles and much higher than all others, at a mean height of 12.5 m. White-eyed Antwrens exploited exclusively dead leaves at lower levels, on average 2.8 m, while Ihering's Antwrens specialized on dead leaves and on the undersides of vines and dead twigs at somewhat higher levels, averaging 5.1 m. Grey Antwrens foraged on live leaves and stems in the mid-storey, at a mean height of 8.8 m. Finally, the Long-winged and White-flanked Antwrens worked live leaves in the understorey at roughly the same level, around 5 m above the ground. At first glance, the last two species would seem to be nearly identical in their foraging behaviour and more likely, therefore, to compete with one another. The Long-winged Antwren, however, tends to work more open branches of understorey trees, particularly in their outer portions, and tends to forage more by short sallies or hover-gleans to the undersides of leaves, whereas the White-flanked Antwren is more of a perch-gleaner and forages more in the interior portions of trees, where the foliage is denser.

Paired birds maintain their membership of flocks when breeding. The male and the female trade off incubation and brooding duties, with the free member of the pair joining the flock. When young are being fed, the adults may stick closer to the nest, joining the flock only as it passes in near proximity. Once the young have fledged, and are sufficiently grown to fly well, the entire family accompanies the flock, the bond between parents and offspring sometimes lasting for several months (see Breeding).

Several antbirds have a strong association with bamboo. The **Ferruginous Antbird**, for example, is common with all but one of its congeners, is usually restricted to this micro-habitat. It occurs in the understorey, mid-storey and canopy of bamboo thickets, in evergreen forest in the hills of south-east Brazil, which means that it is usually found at forest edges, or at regenerating light-gaps, such as treefalls, landslides and man-made clearings.

[*Drymophila ferruginea*, Serra da Cantareira, São Paulo, Brazil. Photo: Edson Endrigo]







The **Mato Grosso Antbird** is a common bird in the Pantanal region of Brazil. Here, it is usually found near water, inhabiting the understorey of thickets, gallery forests and copses of seasonally flooded savanna woodland with an abundance of vines. Further to the west, in Bolivia, it occurs in moist Chaco woodland with numerous large columnar cacti, and an abundant cover of terrestrial bromeliads.

[*Cercomacra melanaria*,  
Pantanal,  
Mato Grosso, Brazil.  
Photo: Edson Endrigo]

Munn and Terborgh recognized several categories of flock participation that help in understanding the variation between roles of species within flocks. They termed these six categories "Type I" to "Type VI". Type I species, or "core" species, typically occurred in all understorey flocks, and held territories that coincided with those of other core members. Type II species were simply core species with lower population densities than Type I, such that they did not occur in all flocks but were, nevertheless, obligate flock species. Type III species had population densities much greater than those of the core species, with correspondingly smaller territories, smaller than the flock territory; they foraged on their own for much of the time, but joined flocks whenever these passed through their territories, and followed a flock for as long as it remained in its territory. The Plain-throated Antwren and the Black-faced Antbird were examples of Type III at Cocha Cashu. Type IV species were those that opportunistically switched between faster-moving canopy flocks and slower-moving understorey flocks. No antbirds at Cocha Cashu were ranked as Type IV species, although, in many places, this designation could be applied to Spot-winged Antshrikes. Type V species used the forest in a patchy fashion, being restricted to a particular microhabitat such as vine tangles, bamboo thickets or treefall gaps; these birds follow passing flocks regularly, but only so long as the flock remains in the preferred habitat. Type V species at Cocha Cashu included the Fasciated, White-shouldered, Plain-winged and Spot-winged Antshrikes, the Grey Antbird and the Dot-winged Antwren, all of which were more or less confined to areas with extensive vine tangles, and the Ornate Antwren, which was restricted to bamboo. Type VI species were labelled "occasional flock-joiners", those that foraged mostly by themselves, but occasionally joined flocks for short periods of time. No antbirds at Cocha Cashu were categorized as Type VI species.

One of the primary questions surrounding the phenomenon of mixed-species flocks is that of the benefits derived from membership. One possibility is that flocking may enhance the foraging efficiency of some or all members of the flock. This could happen if some members benefited by capturing insects flushed by others, or if greater numbers of flock participants increased the likelihood of locating food sources that could be exploited by all members of the group, as with fruiting trees or emergent swarms of insects. Flocking may also reduce both intraspecific competition, through enhanced spacing of territories, and

interspecific competition, through regulation of return times, thereby preventing overdepletion of resources in any given patch. Potential costs of flocking include increased competition for food. In this context, however, the example of flock-associating antwrens at Cocha Cashu, although not strongly supported by Stotz's study at four other sites, indicated that related species might reduce competition in mixed-species flocks by foraging at different heights, on different substrates or prey, or by utilizing different foraging techniques.

It seems probable that there is no single benefit driving flock participation, and just as likely that the benefits and costs derived from flock membership are not shared equally among all species. One of the likeliest benefits is that of lowered risk of predation by bird-eating hawks (Accipitridae). Although foraging flocks are probably more conspicuous to predators than are single birds or pairs foraging alone, this is probably more than compensated for by the increased vigilance provided by numerous pairs of birds foraging at multiple levels in the understorey. An added benefit is derived by flocks in which one or more nuclear species performs the role of sentinel. The four *Thamnomanes* antshrikes are among the few flock-members that give loud and unambiguous alarm calls, to which other flock species have been shown to respond. All four, but especially the Bluish-slate and Cinereous Antshrikes, are aerial hawkers or sally-strikers that sit still and upright while scanning for prey. They are in a much better position to spot potential predators than are the foliage-gleaning and bark-foraging members of the flock, most of which are in near-constant motion and often have the head buried in vegetation. The antshrikes, too, benefit from this relationship, because other, more active species in the flock serve as "beaters", flushing prey that the antshrikes, with darting speed, are able to exploit. The antshrikes end up by expending less energy, with greater returns, than they would if they foraged alone. The other flock-members are more free to concentrate on foraging, which means that their efforts are likely to yield higher numbers of prey per unit time than would be the case if they had to devote considerable time to scanning for predators.

This mutually beneficial relationship is analogous to that found between the various species of shrike-tanager (*Lanio*) and the species with which they travel in mixed canopy flocks. Shrike-tanagers, like *Thamnomanes* antshrikes, perch upright and sally to take prey from the air or from vegetation. They, too,





When it was first discovered in the mid-1990s, the **Marsh Antwren** was thought to belong with *Cercomacra*. Due to irregularities in morphology and ecology, however, a new genus was erected, *Stymphalornis*. Recent research suggests that this genus should be subsumed within *Formicivora*, but the preferred habitat of the Marsh Antwren remains unique in the family. It is restricted to a small area of Paraná and Santa Catarina, Brazil, where it frequents coastal marshes and wetlands dominated by the rushes *Typha domingensis* and *Scirpus californicus*.

[*Stymphalornis acutirostris*,  
Bahia de Guaratuba,  
Paraná, Brazil.  
Photo: Bret Whitney]

give loud alarm calls that are recognized by all members of the flock. The White-winged Shrike-tanager (*Lanio versicolor*) regularly gives false alarm calls; these have the effect of scattering the other flock-members, which, in diving for cover, often flush more insects for the shrike-tanager. The latter also emits legitimate alarm calls when predators are near, so that other flock species cannot distinguish between a false alarm and the real thing. The consequences of ignoring a real alarm call are potentially grave, which serves to maintain the benefits to the shrike-tanager. The *Thamnomanes* antshrikes have not yet been documented to "cry wolf" in the manner of the shrike-tanagers, but they may do so.

Mixed-species flocks in lowland Panama were shown by R. H. Wiley and by Gradwohl and Greenberg to function in much the same way as the Cocha Cashu flocks studied by Munn and Terborgh, but with different nuclear species. As mentioned above, there are no *Thamnomanes* antshrikes in Panama, where the nucleus of the understory flocks consisted of pairs or families of Checker-throated Antwrens and Dot-winged Antwrens that had completely overlapping territories. These species defended common boundaries in conspicuous territorial-border displays, often displaying in the same trees, but with their defences directed only at conspecifics in the neighbouring flocks. Gradwohl and Greenberg found that home ranges of most of the attendant species either were smaller than one antwren territory, or were larger and included three or more antwren territories. As the two species of antwren moved through the territory, other species joined and left them within the constraints of their own spacing systems. Those with larger home ranges, such as woodcreepers, appeared to cover the home range by switching from one antwren flock to another. Species with smaller territories, such as the Western Slaty Antshrike, stayed with the flock only for as long as it remained within the species' own territory, before dropping out.

Wiley considered the White-flanked Antwren to be a third nuclear species in understory flocks, although he found the three species of antwren co-occurring in only ten of 29 flocks, and detected only one of the three in another ten of 29 flocks. He observed that all three antwrens performed a mobbing function, thus probably enhancing predator detection for other flock-mem-

bers. The three species reduced potential competition among themselves in much the same way as did those at Cocha Cashu. Dot-winged Antwrens foraged primarily in the densest vine tangles, in areas of much greater foliage density than in those used by the other two. The Checker-throated and White-flanked Antwrens foraged in areas of similar foliage density, but the former fed exclusively on arthropods hidden in dead leaves, whereas the latter gleaned insects almost entirely from live vegetation. Wiley suggested that the White-flanked Antwren and the Checker-throated Antwren had co-operative roles that enhanced the maintenance of flock cohesion. The Checker-throated Antwren was the most vocal species in giving alarm calls and seemed, therefore, to act as the chief flock sentinel. Male White-flanked Antwrens, with a boldly contrasting black body and white flank patches, the latter made more conspicuous by constant wing-flicking, were thought to have a special role in maintaining flock cohesion by means of visual signals. By contrast, Gradwohl and Greenberg did not consider the White-flanked Antwren to be a nuclear species in their flocks. They found it to have territories of a size equivalent to between two and three Checker-throated/Dot-winged territories, thus making the White-flanked Antwren more like a Type II species as defined by Munn and Terborgh.

C. A. Botero evaluated the role of the White-flanked Antwren as a potential nuclear species in mixed flocks in gallery forest in eastern Colombia, and experimentally tested the hypothesis that the conspicuous flashing of the white flank patches of males promotes flock cohesion. The experiment involved applying alcohol-based black dye to the flanks and underwings of mist-netted male antwrens, and comparing the various parameters of flock cohesion and association before and after this treatment. Mixed-species flocks that included White-flanked Antwrens contained, on average, a significantly higher number of species than did those without the antwren. Botero found that the dyed male antwrens continued to wing-flick at rates similar to those before dyeing. Furthermore, the absence of white flank feathers did not seem to affect the performance of individuals during territorial encounters, its recognition by other conspecific members of the group, or the degree of association between conspecifics while foraging. In addition, wing-flicking rates were not correlated with the number of attendant species in the flocks, nor were there any



significant changes in the number of such species following the dyeing of the antwrens. Finally, manipulation of flank and underwing colours did not affect either the distances between the different attendant species and the nearest male antwren, or the average time that most of those species spent with the flock.

Male White-flanked Antwrens met many traditional criteria for nuclear species; for example, they formed intraspecific groups, they were present in most mixed-species flocks, they were visually conspicuous, and flocks with antwrens contained more species than did those without antwrens. Nevertheless, Botero concluded that they did not promote interspecific cohesion within the flocks at his study site. He suggested that the effort and concentration required for attendant species to follow the constantly moving visual signal of the antwrens' flank-flashes were incompatible with their foraging requirements. The limitations of visual signals in the dense understorey vegetation of tropical forest are indicated by the fact that paired males and females of most antbird species, including the White-flanked Antwren, rely on various types of vocalizations to maintain contact when separated by more than a few metres (see Voice).

This still left the question of why flocks with White-flanked Antwrens contained more species than did those without. Botero hypothesized that bigger flocks might have been more attractive to White-flanked Antwrens, or that the conspicuousness of male antwrens could increase the probability that other birds would detect and join the flock. In comparing the possible nuclear role of the White-flanked Antwren with that of *Thamnomanes* antshrikes, it is worth noting the findings of P. C. Stouffer and R. O. Bierregaard from the forest-fragmentation project near Manaus, in Brazil (see Status and Conservation). Fragmentation of the forest resulted in the disappearance of both Cinereous and Dusky-throated Antshrikes from forest isolates. The elimination of these nuclear species was followed by the "complete disintegration" of mixed-species understorey flocks, even when White-flanked Antwrens and some other regular attendant species maintained their population densities.

One of the factors frequently invoked as promoting increased species diversity in tropical forest is the availability of a variety of resources that are absent or of restricted availability in temperate forest. Among the more obvious examples are fruit, nectar and abundant insects, which are present throughout the year. A less obvious resource is dead leaves. In many tropical forests,

dead leaves falling from the canopy are trapped by vines, palm fronds and other vegetation, particularly in the understorey, where vegetation is often most dense. This creates an aerial or arboreal leaf litter, which, as the leaves wither and curl, provides hiding places for many primarily nocturnal arthropods. A number of tropical bird species forage for arthropods in the recesses of these curled, dead leaves, and a smaller subset has been shown to specialize on this substrate. Presumably, the pronounced seasonality of leaf fall at temperate latitudes limits the ability of both arthropods and birds to specialize on dead leaves in these respective ways.

Remsen and Parker were among the first to point out the contribution to Neotropical bird-species richness of the year-around availability of suspended dead leaves. Working in Peru and Bolivia, they grouped dead-leaf users into one of three categories: "specialists", those species seen to search dead leaves in more than 75% of all observations; "regular users", those searching dead leaves in 25-75% of observations; and "occasional users", species for which they recorded the behaviour in less than 25% of all observations. Using these criteria, they found eleven species at their study sites to be specialists in searching dead leaves. Two of those were antbirds: the White-eyed Antwren, for which 95.3% of all foraging manoeuvres were directed to dead leaves, and the Ornate Antwren, for which the corresponding figure was 98.9%. These findings agreed well with those of other researchers concerning some other *Myrmotherula* antwrens with a stippled throat pattern. Both Parker and Willis had pointed out similar behaviour for Rufous-tailed and Stipple-throated Antwrens, and a number of ornithologists had commented on or investigated the dead-leaf-searching behaviour of Checker-throated Antwrens, none more thoroughly than Gradwohl and Greenberg. More recently, K. V. Rosenberg conducted numerous studies of avian dead-leaf foragers in general, and, in particular, of dead-leaf specialists among the *Myrmotherula* antwrens, which he and Hackett termed the "stipple-throated antwren assemblage" (see Systematics).

According to Remsen and Parker's criteria, all members of the "stipple-throated antwren group" appear to be specialists, or obligate users of dead leaves. Gradwohl and Greenberg recorded that Checker-throated Antwrens in Panama spent 98% of their foraging time at dead leaves, and Rosenberg, at study sites in Peru and Bolivia, obtained nearly identical figures for Stipple-



Among the more terrestrial members of the genus *Myrmeciza*, the **Scalloped Antbird** spends most of its time in leaf litter.

It progresses with short hops, stopping regularly to shift leaves in the manner of a leaf-tosser (*Sclerurus*), usually with a vigorous sideways flick of the bill, sometimes by picking up a leaf and throwing it. Occasionally, it burrows its head under the leaves, or hops up to low perches to peer about before dropping back to the ground. The tail is often partially fanned, as here; it is also regularly dipped slowly, then flicked upwards more rapidly.

[*Myrmeciza ruficauda* soror, Alagoas, Brazil. Photo: Anita Studer]





Many antbirds are staunch inhabitants of the understorey, and rarely seek sunlight. Others frequent the canopy and have never been seen "sun-bathing", although they may well do so out of sight, high above the ground. Certainly, a few species that live in relatively open habitats are known to "sun-bathe" in a manner similar to most birds: an individual (in this case a **Stripe-backed Antbird**) pauses in a sunlit spot with feathers ruffled, and wings and tail variably outstretched. In general, such poses are seldom held for more than a minute or two before the bird snaps out of its trance-like state, sleeks its feathers, and moves back to the shade.

[*Myrmotherula strigilatus suspicax*,  
Salta, Argentina.  
Photos: José & Adriana Calo]

throated, White-eyed and Ornate Antwrens of, respectively, 94%, 99% and 98%. Similarly, various published and unpublished data sets record dead-leaf use greater than 90% for the Brown-bellied, Foothill, Rufous-tailed and Brown-backed Antwrens (*Myrmotherula fieldsae*), as well.

All these studies of dead-leaf-foraging guilds have found that most of the specialists are either ovenbirds or thamnophilid antbirds and, of these, most are understorey species. The rarity of extreme dead-leaf specialization among canopy and subcanopy species probably reflects the rarity of suspended dead leaves at those strata compared with the understorey. Among antbirds, the Spot-winged Antshrike is the only canopy or subcanopy species that uses dead leaves to a large extent, as it switches between bouts of dead-leaf and live-leaf foraging. In Rosenberg's study, it was recorded as exploiting dead leaves in 58% of foraging observations; it was also the only species for which dead-leaf foraging appeared to be height-dependent, as it searched dead leaves significantly more often when foraging in the understorey or mid-storey than when at higher levels. A number of other antbirds, at least in some parts of their range, are regular users of dead leaves. In Rosenberg's study, these included the Plain-throated, Ihering's and Dot-winged Antwrens and the Warbling Antbird, with relevant figures of, respectively, 50%, 47%, 26% and 31%, but the use of dead-leaf substrates by these species appears to vary regionally.

Dead-leaf specialists, including members of the "stipple-throated antwren assemblage", tend to move from one dead leaf or dead-leaf cluster to another, ignoring intervening areas of live foliage or other substrates. Because dead leaves are often suspended in places that are difficult to reach, they must employ a number of acrobatic manoeuvres in order to inspect the leaves. These include hanging from the margins of the dead leaves or sitting astride them, as well as clinging to adjacent vegetation and reaching, often while upside-down, to get at the leaves. Rosenberg found that what separated specialists and regular users from occasional users was the tendency of the former to manipulate dead leaves physically with the bill or feet. All specialists picked at dead leaves with the bill in at least 50% of their foraging attempts, often probing inside the curls and sometimes championing down on one end of the leaf to flush immobile or hidden

prey. These actions were often accompanied by head-cocking, as if to listen, and by peering inside the leaves. In contrast, non-specialists visually inspect leaves, usually briefly, but rarely manipulate the leaf as a means of aiding prey detection. In contrast to various furnariid dead-leaf specialists, no antbirds were found to use their feet to manipulate dead leaves. Many of the larger furnariids, as well as some woodcreepers and barbets (Capitonidae), tear apart leaves during their searches, effectively destroying those leaves as future hiding places for arthropods. The specialist antwrens usually leave inspected leaves intact, maintaining their potential as renewable resources.

In Rosenberg's studies, the diets of nearly all dead-leaf specialists were qualitatively similar, differing only in the proportions of the major prey taxa taken. Typically, most of the food, 64%-94%, consisted of orthopterans, cockroaches, beetles and spiders. In general, antwrens ate more cockroaches and spiders than did the various furnariids, and dead-leaf specialists among the antwrens ate a higher proportion of orthopterans and cockroaches than did the live-leaf foragers, which tended to take more larvae. Dietary diversity was lowest in the Stipple-throated Antwren, more than 50% of the consumed prey items of which were katydids or crickets. Ornate Antwrens took more spiders and heteropteran bugs (mostly Pentatomidae) than did the other antwrens. Antwrens generally did not take orthopterans larger than 20 mm, and virtually all beetles eaten measured less than 10 mm. Apart from orthopterans, which were preferentially selected by all antwrens, prey taken by the dead-leaf specialists were selected roughly in proportion to their availability. The arthropod fauna found in dead leaves consisted mostly of cockroaches and orthopterans, spiders and small beetles, with smaller numbers of colonial ants, heteropterans, wasps and flies, and some moths and larvae. The range of arthropods in live foliage was significantly different, with no cockroaches and fewer orthopterans and beetles, and with ants, heteropterans, flies and wasps more numerous. Among the antwrens studied by Rosenberg, the two live-leaf foragers, the White-flanked and Long-winged Antwrens, did not take prey in proportion to their abundance on live leaves; instead, they consumed many more beetles and larvae than expected, and many fewer ants, flies and wasps.





All antbirds are diurnal. At night they roost on narrow twigs at varying heights above the ground. Not surprisingly, it appears that canopy species roost in the canopy and understorey species, like this **Amazonian Antshrike**, roost lower down in shrubs and saplings. In the few instances for which details of roosting behaviour are known, antbirds appear to revisit traditional roost-sites night after night, arriving and departing at regular times, regardless of weather conditions.

[*Thamnophilus amazonicus amazonicus*, near Jenaro Herrera, Loreto, Peru. Photo: Mark Bowler/NHPA]

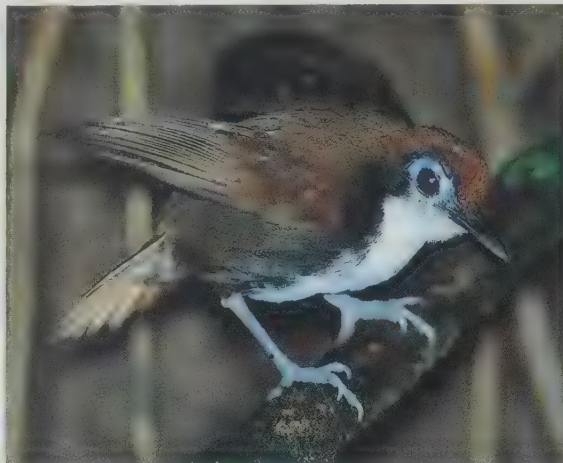
In Panama, the most commonly observed prey taken by Checker-throated Antwrens were orthopterans, cockroaches and spiders. Gradwohl and Greenberg conducted an experiment to determine if the Checker-throated Antwrens had a measurable effect on their prey populations. They used mesh enclosures to prevent the antwrens from foraging in selected areas, the mesh size being large enough to allow the passage of the largest insects, but too small for antwrens to pass through. Sampling of enclosures and control sites prior to the experiment revealed that the two did not differ in the fauna that they contained. Enclosures were maintained for six weeks, and both they and the control plots were then sampled, when it was found that arthropods inhabiting aerial leaf litter were nearly twice as common inside the enclosures as outside. This difference between controls and enclosures was assumed to be attributable to the Checker-throated Antwrens, as they were the only dead-leaf specialists present in the study site. These results suggest that, in a six-week period, a single bird species reduced the quantity of its preferred prey items by almost 50%.

Remsen and Parker found that syntopic dead-leaf specialists differed in body size, which presumably was reflected in differences in sizes of prey taken. There were also differences in the sizes of leaves examined by each one and in foraging height, or in their habitat preferences. At the lower-lying of the two study sites, White-eyed Antwrens and Ornate Antwrens occupied different habitats, with the former in forest and the latter in bamboo thickets. At the higher site, where White-eyed Antwrens did not occur, Ornate Antwrens were found in all forest types, as well as in bamboo thickets. Similarly, Rosenberg found that, within a habitat, most species differed from one another either in foraging height or in the average size of leaves searched. The most important way in which guild-members differed, however, was in the types of dead leaves that they exploited. White-eyed Antwrens in upland forest in Madre de Dios, Peru, and Stipple-throated Antwrens in upland forest in Pando, Bolivia, both fed frequently at understorey palm leaflets (e.g. *Geonoma*). In low-lying forest in Peru, Ornate Antwrens differed greatly from White-eyed Antwrens in making heavy use of dead bamboo leaves; at Pando, however, the White-eyed Antwren was the only *Myrmotherula* in bamboo, and there it fed frequently at dead bamboo leaves.

Furthermore, where the Ornate and White-eyed Antwrens overlapped in low-lying forest in Peru, they also differed significantly in average foraging height and in size of leaves inspected. In Gradwohl and Greenberg's studies of Checker-throated Antwrens, there were no potentially competing species of dead-leaf specialists. Checker-throated Antwrens were not constrained in their habitat selection, although they seemed to prefer vine tangles, where trapped aerial leaf litter was most abundant. They also used leaves at random, despite the fact that longer and more curled leaves were shown to contain the most arthropods.

Yet another novel resource available to tropical-forest birds results from the movements of army ants. The term "army ant" is most commonly used to refer to ants of the subfamily Dorylinae, group-raiding nomads that regularly change the location of their nest-site. These ants occur in tropical Africa and the Americas, and are represented in the Neotropics by the tribe Ecitonini. Although army ants of one species or another can be found from the United States south to Patagonia, most are underground or nocturnal raiders and, therefore, of little interest to birds. Other species raid above ground, but only on overcast days, and hence are unpredictable. Still others are regular surface raiders, but move in narrow columns that flush few prey, and, again, are of little interest to birds. One widespread Neotropical species, *Eciton burchelli*, is a diurnal swarm raider, fanning out along broad fronts containing hundreds of thousands of ravenous carnivorous ants. In the process, these flush large numbers of arthropods and small vertebrates, many of which are normally concealed in leaf litter. Ahead of the swarm await opportunistic birds and parasitic wasps and flies, ready to pounce on potential prey or hosts fleeing the ants. The birds do not eat the ants, although ants clinging to larger prey are occasionally ingested. Rather, the army ants provide an important service that greatly increases foraging efficiency. Instead of expending energy in systematic, time-consuming searching, the birds allow the ants to act as "beaters", which drive an abundance of prey right into their laps. An excellent example of the advantage provided to birds that forage over ants can be found in Willis's studies of Spotted Antbirds. Willis found that this species, when foraging actively at good ant swarms and away from competing larger species, tried for prey at an average interval of once every 32.3 seconds. By comparison, the average interval





After hours traipsing through the understorey of Amazonian rainforest without seeing much sign of life, an ornithologist can easily become slightly demoralized. The best antidote for this malaise is an antswarm. To watch a raiding carpet of ants accompanied by antbirds is a vivid and entertaining experience, especially because swarm-following birds are sometimes so engrossed in their feeding frenzy that they seem blithely unaware of human presence. The dark understorey suddenly comes to life with animated creatures, all hunting, churring, chasing and bickering in the pursuit of prey. This sequence of photographs was taken at an antswarm attended by **Bicoloured Antbirds**. It shows the range of poses adopted while these birds hunt. Unless displaced by competitors, they tend to perch at the swarm front, usually less than 1 m above the ground. Like most "professional" ant-followers, they are as adept at clinging laterally to slender vertical stems as they are at using horizontal branches. With their strong legs, they frequently jump from one stem to another, without using the wings. They display remarkable agility, pitching and swinging around perches, making split-second adjustments and darting down at great speed, according to the movements of the ants and the appearance of flushed prey beneath them.

[*Gymnopithys leucaspis lateralis*,  
Explorama Lodge,  
Quebrada Sucusari, Peru.  
Photos: Jordi Bas]



for Spotted Antbirds away from ants was 111.8 seconds, a nearly fourfold difference.

A number of species have evolved to specialize in foraging over army ants, to the point that virtually all of their food is obtained in this way. Most of these so-called obligate, or "professional", army-ant followers are members of the Thamnophilidae, although a few belong to the woodcreeper family. Other species are "regular followers" which routinely follow ants but often forage away from them, while others again rank only as "occasional followers". It is from the propensity of some thamnophilid species to follow ants that the name "antbird" is derived.

In order to appreciate how ant-following birds forage, one must first understand the basic biology and natural history of the ants, which was described by T. C. Schneirla for *Eciton burchelli*. The nest, or "bivouac", of the colony is a tightly bundled mass of hundreds of thousands of ants, tucked under a fallen tree, inside a log or hollow, or in some similarly sheltered spot. Inside the mass of workers and soldiers lie the queen and her broods. The reproductive cycle of the queen determines the activity cycles of the colony. So-called "statory phases", or "stationary phases", lasting about three weeks, alternate with "nomadic phases", which last about two weeks. The bivouac remains in a single location for the duration of the statory period, during which the queen lays her eggs. Meanwhile, the ants launch weak raids of short duration, often lasting only a few hours, or, on some days, make no raids at all. At the end of the statory phase the eggs hatch, producing masses of new larvae that must be fed. The colony then enters the nomadic phase, during which the bivouac is typically moved to a new location every night. It is during this period that the ants conduct massive daily raids, usually commencing shortly after dawn and lasting throughout the day. A nomadic raid begins when ants stream out of the bivouac and mass around it, before finally heading off in a single direction. The front of the swarm is often irregular, owing in part to irregularities of the terrain, and the swarm may temporarily split into two or more forks, which will eventually rejoin after less productive branches fold. Large swarms can measure more than 15 m across, with ants scurrying over and under logs and brush piles, through the leaf litter, and several metres up the bases of trees. Most prey are flushed along the swarm front, as cockroaches, crickets, spiders, beetles, sowbugs, other ants, and small lizards and frogs all run for their lives to escape the encroaching hordes. Behind the swarm front is the "fan", a broad network of ants racing in all directions, which eventually narrows to a "trail", along which ants carry back pieces of food to feed to the queen and her larvae. The average speed of 113 swarms watched by Willis on Barro Colorado Island, in Panama, was 14.8 m per hour. Nomadic swarms may move 200 m or more in a day, less on days when rains cause temporary cessation of raiding. Each night, the ants move the bivouac to a suitable new site along one of the trails made earlier in the day. The ants wander without regard for territorial borders, and at times two or more swarms can be within a few hundred metres of one another, whereas at other times there may be no swarms at all within a square kilometre. Various studies of army ants on Barro Colorado estimate an average of about three swarms per square kilometre. At the end of the nomadic phase, the developing larvae spin their cocoons, and the colony re-enters the statory phase. Once again, the queen will lay a new batch of eggs, which, by the end of the period, will hatch, coincident with the hatching pupae of the previous generation. Thus, a new generation of workers will be available to help to feed the newly hatched larvae, setting off the next nomadic phase. In this manner, nomadic and statory cycles alternate throughout the year, providing predictable foraging opportunities for ant-following birds.

Although *Eciton burchelli* is the army ant of choice among ant-following birds, other species are occasionally exploited. Birds regularly follow the smaller *Labidus praedator*, a swarm-raiding species that forms small but very dense swarms. This ant raids underground for much of the time, emerging on the surface mainly in the rainy season, which has earned it the name of "rain ant" in parts of Brazil. This seasonality may be a response to the cycles of isopods and amphipods, the primary prey items of *L. praedator*, which are rare in leaf litter during the dry season, but common during the rainy season. *Labidus* forages



mainly in more open parts of the forest understorey, where its preferred prey are more common; it tends not to forage so high into trees nor so much in dense tangles as does *E. burchelli*, and its raids seldom remain above ground for so long. It does not flush so many arthropods as *E. burchelli*, and its swarms are often more of an ancillary resource for ant-following birds when no *E. burchelli* swarms are nearby.

Among the Thamnophilidae, ant-following is most highly evolved in the seven genera *Rhegmatorhina*, *Phlegopsis*, *Skutuchia*, *Phaenostictus*, *Gymnophrys*, *Pithys* and *Pyriglena*. Of these obligate ant-followers, which total 18 species, only the three *Pyriglena* species, the fire-eyes, are ever regularly seen foraging away from ants. In addition to these 18, six other thamnophilids, in four genera, are "regular" ant-followers, but are just as frequently found away from ants: these are the Bare-crowned, Sooty, Immaculate, Black-headed, Spotted and Scale-backed Antbirds. Many more members of the family attend ant swarms occasionally, but seldom stay with them for more than short periods of time. Most of what is known about ant-following birds in general, and about the obligate and regular ant-following antbirds in particular, is due to the pioneering fieldwork and voluminous publications of Willis and Y. Oniki. Willis, especially, has conducted field studies of virtually all of the above-mentioned species, and the summaries included here, as well as the discussions of ant-following species in the following section (see Breeding), are based largely on his work.

Obligate army-ant followers begin cruising, or "wandering", in search of ants shortly after dawn. They generally move through the forest 1-2 m above the ground, flying 1-15 m at a time, and perching between flights on slender vertical stems, from which they peer about before flying rapidly to the next perch. Cruising birds often give loudsongs (see Voice), particularly when pair-members are visually separated. These songs carry for up to 300 m in the forest, and often draw responses from other species of obligate ant-followers, which may investigate the source of the songs in the expectation of locating a swarm of ants. Birds looking for ants often start by returning to bivouac sites or swarm sites of the previous afternoon. Once a trail of ants is located, the antbirds follow it to reach the head of the swarm. The birds probably stop at the first active swarm that they encounter in the morning, but also commonly shift from one colony to another and back. Colour-ringed White-plumed Antbirds have been found attending three different swarms on the same day, and regularly switch between swarms up to a kilometre or more apart. During the statory period of a given colony, antbirds often visit the bivouac site daily, despite the absence of swarming. Even after find-

Birds living in dimly lit habitats can be expected to employ vocalizations extensively for communication, and the antbirds are no exception.

Many have loud and distinctive vocalizations, and most, such as this Large-tailed Antshrike, are far easier to locate if their voice is known.

The sounds of antbird loudsongs are amongst those that serve to epitomize tropical forests in the New World.

[*Mackenziaena leachii*,  
Fazenda Intervalles,  
São Paulo, Brazil.  
Photo: Edson Endrigo]



ing and switching to a nomadic colony, they may continue to visit a known statary colony, almost as if monitoring its progress.

Once a nomadic raid is located, the antbirds quickly settle into foraging. In the absence of competing birds, they move quickly to the swarm front, where most potential prey are being flushed. They perch usually less than 1 m above the ground, and often below 0.5 m. Most of the obligate ant-followers are equally adept at clinging laterally to slender vertical stems as they are at sitting astride horizontal limbs (see Morphological Aspects). In the typical posture, the upper leg is flexed and the lower leg extended. From these perches, the birds display remarkable gymnastic agility, as they pitch, roll or yaw in making split-second adjustments according to the actions of the ants and the flushed prey below. With their strong legs, the antbirds frequently jump from one vertical stem to another, without using the wings. The most frequent attack manoeuvres are sallies, involving a sudden jump or flight followed by capture, before landing; the second most common strategy is simple lunges from a perch.

Sallying antbirds snap up prey and bounce back quickly to a perch before the swarming ants can counter-attack. Willis found that, for Ocellated and Bicoloured Antbirds, over 75% of such sallies to the ground were over distances of within 0.5 m of the perch, and less than 1% were more than 2 m. At times, prey such as spiders and orthopterans may take extreme evasive action, making a series of bounding jumps or flights in order to escape both the birds and the ants, with pursuing antbirds following in a zigzag series of stops and starts, fluttering hops, or flights. Prey animals sometimes take refuge beneath the leaf litter, whereupon the antbird pounces on the spot and stands, splay-legged, as it tosses leaf after leaf with its bill in an attempt to uncover the arthropod. All the while, ants may be swarming over the feet of the bird, which often hops from one supporting foot to the other in a jittery attempt to dislodge the insects. Lunging birds often yaw or pitch to snatch prey with quick stabs of the bill from the ground or from stem or leaf surfaces. At other times, the antbird may fly or jump to the ground, or to a perch closer to the prey, before lunging. Occasionally, flying or jumping prey are snapped out of the air, or from overhanging vegetation.

There is no shortage of potential food at typical *Eciton* swarms. Willis found that Ocellated Antbirds, foraging away from

competitors at good sites over ants, darted for food at an average frequency of once every 38.5 seconds; the average for Bicoloured Antbirds was once every 42.6 seconds.

Most obligate ant-following antbirds deal with larger prey items in a manner that differs somewhat from that of other members of the family. Smaller prey, up to roughly the length of the bill, are routinely mandibulated slightly, if at all, and then swallowed whole. In the process of subduing and dismembering larger prey, such as long-legged orthopterans and spiders, the obligate ant-followers, unlike most other antbirds, seldom bash these against branches. Instead, they typically grasp the arthropod by an appendage and shake it vigorously, until the appendage and the body separate. Each appendage is eaten as it comes off. Once all of the legs are removed, the bird often separates the principal body segments, again by chewing and shaking. This process is often lengthy, lasting up to ten minutes or more for some larger items, and the antbird, in order to accomplish the task, usually retreats some distance from the main front of the swarm, away from other, competing birds as well as from the ants. After eating, the bird often wipes its bill on a branch before resumption of foraging. The pace at which large, energy-rich prey items can be caught is so rapid that the antbirds eventually show signs of satiation. They slow down the rate of sallying, and spend longer and longer periods in watching the action. Smaller prey that were readily taken earlier are now ignored, and only larger items are pursued. Handling times become longer, and birds often retreat to the periphery of the swarm to preen and rest.

The foregoing describes generally the foraging behaviour of the various species of *Gymnopathys* and *Rhegmatorhina* and, to a lesser extent, that of the other obligate ant-followers. There are some differences among species and genera. Ocellated Antbirds forage in much the same way as do *Gymnopathys* and *Rhegmatorhina* species; despite their large size, they cling readily, although rather less often, to slender vertical stems, selecting perches mostly below 0.5 m, and taking most prey by sallying or lunging. They forage from the ground more often than do the smaller obligate ant-followers. The Pale-faced Antbird is similar in its choice of vertical or horizontal perches, in its postures, and in capturing most prey by sallying to the ground and then quickly jumping or flying back to a perch. It is somewhat more sedate



Unlike that of oscine passerines, the syrinx of antbirds is rather basic in construction and the birds are thought not to learn their vocalizations.

The most noticeable songs of thamnophilids, the loudsongs, are therefore correspondingly uncomplicated and stereotyped. They usually consist of a series of simple notes, although the variety of ways in which these notes are shaped into clear whistles or raspy sounds, slowed down, or speeded up into trills, seems endless. The loudsong of the male **Stripe-backed Antbird** begins with one harsh note and ends, after a brief interval, with two longer whistles, each rising and falling in pitch.

[*Myrmorchilus strigilatus*  
*suspicax*,  
Salta, Argentina.  
Photo: José & Adriana  
Calo]



Analysis of loudsongs has proved to be an important tool in determining taxonomic relationships in the antbird family. The loudsong of the **Brown-bellied Antwren** is a very rapid, high-pitched, musical trill initially ascending sharply in pitch and intensity, then gradually dropping again. This vocalization helps to corroborate the arguments based on morphology in placing the species in the "stipple-throated assemblage" of *Myrmotherula antwrens*. However, it is not only the loudsongs that are useful. A second, distinct vocalization is used in ritualized confrontations by all eight species in this assemblage, a fact which clearly supports their monophyly.

[*Myrmotherula gutturalis*,  
Guyana.  
Photo: Doug Wechsler/  
VIREO]



than the smaller *Gymnopithys* and *Rhegmatorhina* species, and is more prone to foraging on the ground by hopping just ahead of the swarm. Willis described it as being semi-terrestrial when compared with *Gymnopithys*. The two species of bare-eye, in the genus *Phlegopsis*, forage in similar fashions, selecting horizontal and inclined perches as often as vertical ones. These large antbirds cling more awkwardly to vertical stems than do the smaller obligate ant-followers; they are less likely than Pale-faced Antbirds, but more likely than smaller antbirds, to forage from the ground. The *Pyriglena* fire-eyes prefer horizontal or slightly inclined perches to vertical ones, and forage most efficiently when ant swarms enter tangled undergrowth. They tend to move around the swarms more actively, rather than waiting for prolonged periods on a single perch as *Gymnopithys* and *Rhegmatorhina* are prone to do. The small Spotted Antbird is much like a *Gymnopithys* species in its foraging behaviour over ants, but it sallies more readily to take prey from the air or from above-ground vegetation. Scale-backed Antbirds, with their unusually long claws and toes, combined with a light body weight, are unique among the ant-following antbirds in perching crosswise on vertical trunks of more than 4 cm in diameter. Other antbirds perch on large trunks mainly if the perch angle is less than 45 degrees from the horizontal, and appear awkward and unable to maintain position on thicker vertical trunks. Scale-backed Antbirds make quick, darting sallies to take prey, and then fly off some distance to consume it. The White-plumed Antbird, the smallest of the obligate ant-followers, forages in a manner similar to that of *Gymnopithys* species, selecting vertical or horizontal perches very near the ground, and taking most prey by sallying to the ground. It regularly uses the thinnest perches, mostly less than 1 cm in diameter, and seldom sallies more than 0.3 m. It is distinguished by its exceptionally fast, darting movements in pursuit of prey.

Obligate and regular ant-followers have evolved morphologically and behaviourally to exploit the novel foraging opportunities provided by ants. With this specialization, they are able to outcompete more generalist species when foraging over ants. Specialization, however, has its costs. Birds that are dependent on nomadic ants for nearly all of their food must solve the problem of how to maintain territories and raise young. As the ant swarms wander without respect for boundaries, the presence of army-ant colonies near the nest of a pair of antbirds at a given

point in time is completely unpredictable. This uncertainty is compounded by the complex life-cycle of the ants, which are of primary value to the birds during their nomadic phase, when they make prolonged daily raids. The time required for the birds to progress from egg-laying to the fledging of young is much longer than the duration of the nomadic phase of any one colony of ants. Furthermore, with ants moving up to 200 m per day during their nomadic periods, any given swarm represents an ephemeral resource that quickly becomes impracticable to defend.



Both the English and scientific names of the **Warbling Antbird** refer to its vocalizations, and celebrate the fact that it is an off-heard species throughout much of its range. The choice of adjective, however, was unfortunate: the Warbling Antbird never warbles. The male gives a rather repetitive descending series of notes, starting off strident, becoming quickly rasping, and ending with a snarl. As with many antbirds, the female has a slightly different song (though still not a warble), which she often gives in a loosely co-ordinated duet, just before or after the male's song comes to an end.

[*Hypocnemis cantator*  
*flavescens*,  
San Miguel,  
south-east Venezuela.  
Photo: Bernard van  
Elegem]



In order to get around these problems, obligate ant-following antbirds have evolved alternative systems of social organization to the strict territoriality found in most species in the family. The exact system employed varies somewhat among different species and genera, but in all cases it involves a common theme. The *Gymnopathys* and *Rhegmatorhina* antbirds appear to be particularly similar in their social systems. The best-known of these species is the Bicoloured Antbird, which Willis studied for many years in Panama. Unmated Bicoloured Antbirds show few signs of territoriality or site-attachment and, instead, wander nomadically from swarm to swarm. Nomadic individuals may pair and continue a nomadic lifestyle, with the difference that they now accompany one another when moving between swarms. Nesting pairs show a high degree of site-fidelity, returning each time to the same area of previous nestings, regardless of the immediate location of ant swarms. These birds restrict their daily movements chiefly to an area within about 400 m of the nest, an area which, on the basis of ant densities at Willis's study sites, should at any point in time encompass an average of 1.3 *Eciton* swarms and 4 *Labidus praedator* swarms. They may, however, follow large *Eciton* swarms up to a kilometre away, sometimes even when there are swarms closer to the nest. In these cases, the birds either have not discovered the closer swarms or have abandoned them in favour of a more productive swarm. This roaming pursuit of the best ant swarms, regardless of distance from the nest, would not be possible if pairs maintained traditional exclusive territories. Although nesting areas, within which resident pairs are dominant, do not overlap, foraging areas overlap completely, so that any point in the forest is within the foraging range of several pairs of Bicoloured Antbirds. Thus, it is possible for several pairs or families, along with unmated single individuals, to congregate over the same swarm of ants. These birds may all follow the same swarm for several days, or some pairs or individuals may switch between different swarms. In any event, these are not social flocks but, rather, aggregations of competing birds independently drawn to a locally abundant resource. The sheer abundance of prey flushed at a large *Eciton* swarm is more than any one pair or family of antbirds could exploit, and the relaxing of territorial boundaries enables all pairs to benefit. Each pair can nest, secure in its access to sufficient numbers of raiding ant

colonies, and without the energetic burden of defending an exceedingly large territory. This loose territoriality promotes higher population densities, and allows unmated young birds to remain in areas in which all, or nearly all, of the available nesting territories are saturated.

For most obligate ant-following thamnophilids, the presence of more than one pair or family at a given swarm is the rule rather than the exception. Weak or irregular raids of statary colonies of *Eciton burchelli*, as well as raids made by smaller species of army ant, may be attended by lone individuals or pairs, but at most nomadic swarms two or three pairs or families will be present, with larger swarms attracting many more birds. The maximum number of individuals reported at a single swarm is 15 for Bicoloured Antbirds, 26 for Rufous-throated Antbirds, 16-20 for Fringe-backed Fire-eyes and 22 for Black-spotted Bare-eyes; peak attendance for most other species is somewhat lower. With large numbers of birds competing for the same prey, agonistic behaviour is to be expected. Each antbird attempts to maintain a clear zone, free of competitors, around itself; if unable to do so, the bird retreats to peripheral, more defensible parts of the swarm. Willis estimated that Bicoloured Antbirds defended an area of 0.3-2 m.

Fortunately, the social organization of each species lends some structure to what would otherwise become a completely chaotic situation. A Bicoloured Antbird in its nesting area is always dominant over other Bicoloured Antbirds, regardless of how many are present, and irrespective of the age, sex, behaviour or breeding status of the birds involved. The dominant pair at any given swarm is the pair that nests in that vicinity; if the resident pair is absent, then the closest neighbouring pair usually assumes the dominant position. In general, the closer a pair is to its nesting territory, the higher the position it occupies in the pecking order at swarms. Pairs foraging at great distances from their nesting areas, however, may find themselves subordinate to unmated birds that have established their position in the hierarchy at a swarm. All obligate ant-followers have evolved a complex set of vocalizations, postures and displays that are used to signal dominance and submissiveness to conspecifics. Under normal conditions, only the dominant individual or pair at a swarm noisily and intensely challenges an approaching bird. High-ranking neighbours may re-



The antbirds have successfully diversified in the Neotropics by exploiting the wide array of food supplies presented by complex habitats such as rainforests. One such food supply is contained within hanging dead leaves, where many insects and spiders lurk, or leave their eggs and young. Several antbird species specialize on this resource, concentrating up to 98% of their foraging time on searching dead leaves. The **Black-hooded Antshrike** is not a specialist, but it routinely visits suspended dead leaves in search of food, often sitting astride larger clumps, probing and tearing them vigorously with its bill.

[*Thamnophilus bridgesi*,  
Carara Biological  
Reserve, Costa Rica.  
Photo: Michael Gore]



spond with muted vocalizations, but subordinates typically move quietly to peripheral areas and direct their aggression towards still lower-ranking conspecifics, or towards other, more subordinate species. Working with individually marked Bicoloured Antbirds, Willis found evidence that reversals of dominance can occur across fairly narrow zones, sometimes as little as 10-30 m, and that dominance areas form a mosaic that lacks appreciable gaps unless a pair disappears. In numerous instances, he observed reversals of dominance when ant swarms moved from the nesting area of one antbird pair to that of another. A pair that was dominant for several days suddenly became subordinate as the ants moved into the nesting area of a second pair, with the situation being reversed again a few months later when the swarm moved back through the nesting area of the first pair.

The closer two individuals come to each other at a swarm, the more likely supplantings or displacements become. A supplanting bird takes the perch of another by flying at it, whereas displacement involves a bird moving away or performing escape or submissive behaviour when approached by another. A mated individual will even displace or supplant its partner when it approaches closer than 1-2 m, and birds that are less accustomed to one another will frequently extend this zone of "personal space" by supplanting at greater distances. Violent outbursts of vocalizations and displays routinely occur when new birds arrive at attended swarms, and these serve mainly to signal position in the pecking order. Dominant antbirds typically take the central sites over the swarm front, where the most prey are usually flushed, with subordinates relegated to peripheral parts of the swarm, which can also include vertical displacement to higher, less productive perches. In addition, dominant individuals are usually conservative in their foraging strategies, clinging to vertical perches and sallying to the ground, with relatively infrequent changes of position. Subordinate birds, on the other hand, are more active, exploring different side branches of the swarm, and more frequently climbing about in tangles of vegetation and perch-gleaning from or sallying to vegetation. Only subordinate birds steal prey from ants that are carrying food back to the bivouac.

Ocellated Antbirds have the most complex social structure of any obligate ant-follower. Young of this species, although fre-

quently wandering from the natal territory, continue to associate with their parents long after the latter have stopped feeding them. Patrilineal clans develop around a successful pair, forming family groups in which young males and the mates that they recruit are tolerated both during and outside breeding seasons for several years. These clans can separate or come together as food supplies dictate. Young females typically remain on their natal territories until the breeding season after the one in which they hatched, and then leave to mate outside the clan. Large clans can contain eight or more individuals, and clan-members bunch together, shoulder to shoulder, in disputes with other clans. Up to four pairs or families of Ocellated Antbirds may be found at the same ant swarm, and, as with the Bicoloured Antbird, the pair in its own nesting area dominates over all others, with similar changes of dominance when swarms cross nesting-area boundaries. Nevertheless, since Ocellated Antbirds have much bigger nesting areas, about 1500 m across, and occur in lower densities, the "dominance cores" are large and sufficiently diffuse that some pairs may never move far enough beyond their nesting areas to become subordinate. When present in higher densities, Ocellated Antbirds occur not only as "main" pairs, but also in what Willis refers to as "superimposed" pairs, the simplest type of which is a young male offspring of the main pair along with his mate. This superimposed pair co-occupies the territory of the main pair, and together they form the nucleus of a clan.

Although Ocellated Antbirds are dominant over all other antbirds at swarms, their intraspecific interactions include more submissive postures and displays than aggressive ones, a fact which allows subordinate individuals to remain in close association with the dominant pair of the group. This lack of intraspecific aggression can be seen in pairs of Ocellated Antbirds, which often forage from the same perches, sometimes with their bodies touching. This is in stark contrast to Bicoloured Antbirds, an individual of which will readily supplant its own mate if the latter invades its zone of "personal space". Female Ocellated Antbirds are smaller than males, and are subordinate even to trespassing males unless their own mates or older sons are present. A female dominates over other females at swarms if she is near her own territory. At swarms attended by multiple pairs or clans, dominance hierarchies often come into play whereby individuals force

All antbirds feed primarily on a wide variety of insects and other arthropods. The **Plain Antvireo** is a generalized perch-gleaner, often accompanying mixed-species flocks and taking prey directly from both surfaces of living leaves, as well as vines and thin branches. Its diet, as far as is known, includes adult and larval beetles and, as here, lepidopteran larvae; it also takes katydids, true bugs and spiders. Only very rarely has it been observed to feed on non-arthropod food, such as the berries of mistletoe (*Rapanea*).

[*Dysithamnus mentalis mentalis*, Iguazú, Misiones, Argentina.

Photo: Julián M. Alonso]







out lower-ranking birds, whether of the same clan or of a different one. Because of the well-developed submissive behaviour among subordinates, these expulsions may be accomplished with a minimum of aggression.

Unlike the preceding species, the Spotted Antbird maintains fixed territories and seldom leaves them. This thamnophilid, even though it attends army-ant swarms, appears not to be part of the clade of obligate ant-followers (see Systematics). At ant swarms within his territory, the male Spotted Antbird is dominant over all other conspecifics, but again, as with Bicoloured Antbirds, there is a reversal of dominance as soon as the male crosses into the territory of a neighbour, regardless of the respective ages of the two birds. Spotted Antbirds regularly attend ant swarms while these are passing through their territories, but they are likely to desert the ants once they have moved into another Spotted Antbird's domain. This species' ability to forage away from ants allows it to maintain rigid territories, something that would be impractical for obligate ant-followers. In complete contrast to Ocellated Antbirds, Spotted Antbirds rarely display submissive behaviour. A trespasser, as soon as it appears at a swarm, is challenged by the resident bird and almost immediately supplanted. It may return repeatedly, but with the same results, and eventually it is either driven off completely or banished to peripheral zones.

All but the most dominant species modify their behaviour over ants when in the presence of competing ant-followers. In general, large obligate followers dominate over smaller obligate followers, as well as over most similarly sized or smaller regular and occasional followers. Within its range, the large Ocellated Antbird is, therefore, the dominant thamnophilid at swarms, with the Bicoloured Antbird being subdominant, and the small Spotted Antbird relegated to the periphery or to making brief, infiltrative raids into the centre of the swarm. In the Guianan region, the

largest obligate follower is the Rufous-throated Antbird, which thoroughly dominates over the smaller White-plumed Antbird. In much of Amazonia, the dominant antbird at swarms is one of the two species of bare-eye or, if neither is present, the local species of *Rhegmatorhina*. Within its small range, the large Pale-faced Antbird typically dominates over all other antbirds. These dominant species control the central zone near the swarm front, which produces the most prey, and they actively supplant or displace subordinate species from this zone.

Subordinate species occupy zones away from the swarm front, the distance increasing in accordance with the position of each in the dominance hierarchy. As with subordinate individuals within a species, they may be displaced to higher perches as well as horizontally, to less preferred foraging stations. A variety of strategies has been adopted by the various subordinate species among the regular and obligate ant-followers. In eastern Amazonian Brazil, White-backed Fire-eyes are always subordinate to Black-spotted Bare-eyes, which frequently target them for attack. The arrival of bare-eyes at a swarm centre causes the fire-eyes to disperse to the periphery or to forage much higher above ground. The fire-eyes maintain near-constant motion, hopping around the edges and sticking to any adjacent areas of dense cover. Were they to remain stationary or in the open, this would invite an attack from the bare-eyes. Black-headed Antbirds pursue a similar strategy when foraging at swarms dominated by Rufous-throated Antbirds, where they are regularly supplanted and seldom allowed to forage over the centre of the swarm; as they are neither fast enough nor agile enough to infiltrate the ranks of the Rufous-throated Antbirds and woodcreepers which dominate the swarm centre, they tend to remain on the periphery, hopping in and out of denser cover. The Lunulated and White-throated Antbirds, in the absence of larger species such as the Reddish-winged Bare-eye, Hairy-crested Antbird and Sooty Antbird, forage in the same way as do the two bigger *Gymnophithys*; when dominant birds are present, however, they are readily displaced to higher and more peripheral zones. The small Scale-backed Antbird adopts a different strategy. It generally avoids confrontation altogether, by either deserting swarms attended by larger antbirds or remaining so far out on the fringes as to avoid any attention; occasionally, individuals may briefly infiltrate the outer zones of swarms, but typically they retreat considerable distances to consume any prey caught. The White-plumed Antbird is also small, but it takes an entirely different tack, relying on its extreme speed and agility repeatedly to infiltrate the innermost zones of a swarm, snatch

Like most antshrikes, the **Barred Antshrike** is a somewhat generalized gleaner, moving through foliage with heavy hops, pausing regularly for prolonged periods (sometimes up to a minute or more), and actively scanning for prey. It often seems ponderous and slightly ungainly, but it is lethally quick when it spots a beetle scuttling along a branch. As well as insects, some antshrikes, especially the Barred, are known to eat seeds and fruit on occasion.

[*Thamnophilus doliatus*, Colombia.  
Photo: Thomas McNish/VIREO]



Closely associated pairs or family groups of **Black-faced Antbirds** are usually found foraging 0-2 m above ground in the slightly open understorey of terra firme, or less often floodplain, forest in Amazonia. They mostly travel independently, away from mixed-species flocks, feeding on a variety of insects and other arthropods; this male has caught a spider.

[*Myrmoborus myotherinus elegans*, Explorama Lodge, Quebrada Sucusari, Peru.  
Photo: Jordi Bas]



prey from under larger species, and retreat just ahead of the inevitable attack. It persists in returning again and again to productive spots, despite being constantly supplanted and assaulted by one or more dominant species. Throughout its wide range, the White-plumed Antbird is subordinate to and systematically attacked by nearly every regular or obligate ant-follower with the exception of the slightly smaller Scale-backed Antbird.

As Willis noted, subordinate ant-followers tend to be non-social, apparently because they are often forced to forage at marginal sites, and because they cannot afford to attract the attention of dominant species by conspicuous vocalizations or displays. In spite of this, large aggregations of subordinate species can be found at some swarms, but these individuals are mostly unrelated and antagonistic towards one another. Accordingly, the subordinate species have not evolved the elaborate submissive postures and displays that help to maintain pecking orders among aggregations of dominant and subdominant obligate ant-followers.

Unfortunately, aside from the intensive studies of relatively few species, some of which are noted above, there remains little in the way of detailed published information on the foraging behaviour of most antbirds. Over the past two decades, a number of fieldworkers have gradually accumulated a wealth of new information, including data on foraging, for many Neotropical birds, the Thamnophilidae among them, but much of this remains unpublished other than as brief summaries in popular field guides. Part of the problem stems from the sheer number of species and the relatively few researchers. Many of the most active and experienced researchers, the very people who know the living birds and their habits best, choose to seek new discoveries rather than to write up their existing knowledge. A bigger part of the problem, however, is that the editors of many technical journals now routinely reject foraging information that has not been rigidly quantified, on the grounds that only quantitative data sets are objectively and statistically comparable. Recently, Whitney and Pacheco, in a thoughtful counterpoint to such thinking, made the point that there are a large number of variables inherent in any study of foraging behaviour. Among these are seasonal, temporal or weather-related fluctuations in composition, abundance, spatial distribution and behaviour of potential prey species; variations in numbers or densities of various foraging substrates at different strata within a forest or between sites; observer-related effects on the foraging behaviour of the birds; and possible seasonal behavioural shifts based on the current reproductive condition of the birds. None of these variables is easily quantified, yet,

unless their effects are taken into account, it is unlikely that any quantified data sets on foraging are comparable. In addition, data collected by individuals of varying skill levels, at different sites, or at the same sites in different seasons or years, and using different definitions and methodologies, defy many of the assumptions on which statistical analyses depend. This is not to argue that quantified studies are not useful and desirable. Nevertheless, the acceptance of the applicability and comparability of differently quantified data sets which fail to address the many possible variables could result in misleading conclusions in studies of systematic relationships and comparative ecology.

This having been said, there remain potential pitfalls in blanket acceptance of unquantified data. Sample size is an important consideration, as is geographical breadth. Care must be taken to avoid extrapolating too much from a few observations, or from more extensive observations of a species in a single locality. Consistency among observations of different fieldworkers is an important control. Keeping these conditions in mind, it seems preferable to include such unquantified data, this being far more informative than saying nothing at all. For many Neotropical birds, even the most basic aspects of natural history, such as nest descriptions and foraging behaviour, are unknown, and the publication of carefully descriptive natural-history information provides a heuristic springboard that can ultimately result in more structured and detailed quantitative studies.

### Breeding

So far as is known, nearly all antbirds are monogamous, pair for life, and defend territories throughout the year. In an eight-year study of colour-ringed Dusky Antbirds in Panama, for example, Morton and B. J. M. Stutchbury found that pair-bonds were permanent, the average adult mortality rate was only 17%, and 72% of territories had the same boundaries as existed when their occupants were first ringed. When mates were experimentally removed from their territories (see Voice), new pair-bonds were in some cases formed within a matter of minutes, although some individuals, of both sexes, remained unpaired for the two-month duration of the experiment. Similarly, Willis found that pair-members of the White-backed Fire-eye commonly remained together throughout the 14 months of his study; as in the Dusky Antbird experiment, however, both males and females remated rapidly if the partner disappeared, as occurred when forest clearance in one corner of the study area led to the dissolution of some pair-bonds.

The *Great Antshrike* is perhaps the most opportunistic of all antbirds. It is one of the few that regularly eat snails and slugs, and it sometimes preys on small rodents. In the Pantanal region of Brazil it is regularly seen foraging in drying marshes, where it uses the leaves of water hyacinths as platforms from which to fish for tadpoles and minnows.

[*Taraba major semifasciatus*,

Asa Wright Nature Centre, Trinidad.

Photo: Joe Fuhman]





Two exceptions to typical antbird life histories have been found, and both involve obligate ant-followers (see Food and Feeding). One is the White-plumed Antbird, which could be considered "serially monogamous". When White-plumed Antbirds fledge two young, each parent cares for one of the fledglings (see below). When only one young is reared, it is almost invariably cared for by the male, at which time the female typically begins to accept food from another male, and very quickly begins reneesting with a new mate. Willis found such "divorces" to be common among White-plumed Antbirds, with females quickly changing mates even when the first one was still alive. He suggested that this comparative inconstancy of pair-bonds may be strongly linked to the relative lack of territoriality in the species. As subordinate obligate ant-followers (see Food and Feeding) that depend on infiltration, White-plumed Antbirds wander so widely that females gain little by staying with the same male and learning his territory. Another, particularly intriguing species is the Black-spotted Bare-eye, which is currently being studied by S. Willson-Hillman in an attempt to determine whether it departs, at least occasionally, from strict monogamy.

Most antbirds hold territories in the classic sense, although exceptions include some nuclear species of mixed-species flocks and virtually all obligate ant-followers (see Food and Feeding). Territories are usually defended throughout the year, by both members of a breeding pair, with agonistic displays, vocalizations, chases and attacks usually directed at trespassers of the same sex. Those of some species are surprisingly small and those of others very large. The territory size of Manu Antbirds has been estimated at 0.5-1 ha at one site in Bolivia and 0.2-0.5 ha at some sites in Brazil, and K. J. Zimmer estimated territories of Yapaana Antbirds in Venezuela to be no more than 50-75 m in diameter. At the other end of the spectrum are the larger species of obligate ant-follower, such as the Ocellated Antbird, which can have home ranges measuring in excess of 1500 m in diameter. Field observations suggest that the territory size of Giant Antshrikes may be even greater. *Myrmotherula* antwrens, many of which are habitual followers of mixed-species flocks, often have territories that are much larger than their small size may suggest. Gradwohl and Greenberg determined the territory of a pair of Checker-throated Antwrens to be 2.3 ha, whereas

those of White-flanked Antwrens were two or three times larger; the Checker-throated Antwrens, however, were found to use a small portion of their territory for a disproportionate amount of time, spending 67% of their time in just 18% of the territory. The extent to which other antbirds may use their territories in a similarly patchy way is not known.

The most common prelude to pair formation and copulation is courtship feeding of the female by the male. This has been documented for many thamnophilid species, and may be common to all members of the family. The duration and extent of courtship feeding probably vary considerably among species and among individual pairs within a species. Nesting by Bicoloured Antbirds is always preceded by several days to several weeks of courtship feeding, during which the female gradually stops foraging for herself and becomes dependent on the attentions of the male. In the early stages, a male brings food mainly after he has satisfied his own hunger. Eventually, he provides the female with nearly all of her food, feeding her before he has fed himself. It seems likely that this degree of attention would not be possible without the relatively abundant foraging opportunities provided by army-ant swarms (see Food and Feeding). Courtship feeding by antbirds that do not follow ants may be somewhat less intense, and of shorter duration. With Bicoloured Antbirds, copulation is usually limited to the last few days of the courtship-feeding period. After the first copulation, females resume feeding themselves. Courtship feeding, as it becomes more sporadic, is more likely to end in copulation than is the case earlier in the period.

Little is known of the behaviour associated with nest-site selection. Willis and Oniki have recorded nest-showing behaviour for Bicoloured Antbirds and Rufous-throated Antbirds. During the last week or two of courtship feeding, the pair often wanders away from ant swarms to search for potential nest-sites. The male frequently initiates this by flying to the top of a hollow stub or some other suitable location, where he proceeds to tail-flick, posture, deliver repetitively a form of the softsong (see Voice), and toss wood chips or dead leaves out of the cavity that he is showing. The male may nest-show at inappropriate sites, but, when a particularly good one is found, he intensifies his actions. Females also search for sites, and may perform similar showing behaviour to bring a site to the attention of the mate.



**Pairs of Rusty-backed Antwrens** usually travel in close association, foraging in the interior of shrubs, small trees and tall grasses. Like other Formicivora species, they are active foragers, progressing by dainty hops and fluttery flights, pausing frequently to scan for insects. These they catch by perch-gleaning with quick stabbing motions of the bill, or by quick horizontal lunges; they also make short sallies to pluck prey from the underside of overhanging vegetation. While foraging, their posture is generally horizontal with the tail half-fanned and cocked slightly above the plane of the body.

[*Formicivora rufa rufa*,  
Pantanal,  
Mato Grosso, Brazil.  
Photo: Fabio Colombini]



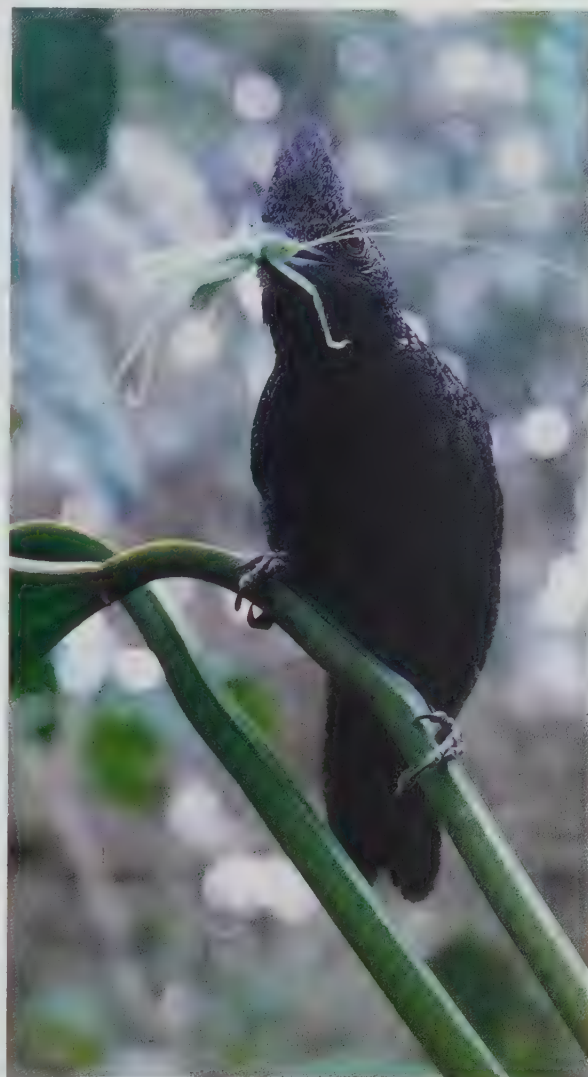
Willis has also described a "draping" display by male White-backed Fire-eyes, which appears to be used to show possible nest-sites to the female. In this display, the male drapes himself over a perch in a limp manner, while conspicuously flaring his white interscapular patch; the neck is protracted and the head held low, with the facial feathers in some cases ruffled and in others sleeked.

Nest construction has been observed for relatively few species of antbird, and in detail for even fewer. So far as is known, both sexes share in building the nest, although, for at least some species, the contribution of the male appears to be the greater. Over a two-hour span, a pair of Dusky Antbirds, watched by Skutch, made 46 trips with nesting material, 29 of these by the male and only 17 by the female. In observing the construction of nine nests of Spotted Antbirds, Willis noted a ratio of three male trips for every female trip; at one nest, the male made 21 trips to the female's ten over a 113-minute period. Skutch noted similar behaviour by Plain Antvireos. Willis found that White-backed Fire-eye males take the initial role in nest-building, with females contributing to the addition of the lining much later in the process. Most extreme were the Black-crested Antshrikes observed by F. Haverschmidt in Surinam, where, in 2.5 hours of observation, the male made 28 trips with nesting material and the female only six. Conversely, a male Dot-winged Antwren, in 2.5 hours of observation by Skutch, made only one visit more than his mate.

Some of the most comprehensive observations of nest-building come from Oniki's studies of Western Slaty Antshrikes in Panama, which suggest that the male and female contributions towards nest construction are almost equal. In nearly 67 hours of observation, she found the median interval between visits to be 4 minutes for the male and 5 minutes for the female; the maximum interval for the male was 147 minutes and for the female 153 minutes. Between arriving and leaving, males spent between 3 and 360 seconds in adding material and working on the nest, while females spent between 8 and 480 seconds. The average time that males spent on the nest in any one trip was 57.3 seconds, compared with 77.8 seconds for the females. Males made more trips, but spent less time per trip. Of a total of 140 visits, 45 were made by the male alone and 26 by the female alone; on 69 occasions, both male and female visited the nest together.

Most species seem to gather the bulk of nesting materials from within 50 m or so of the nest-site. Those which habitually forage with mixed-species flocks tend to work on their nests more sporadically, making trips only as the flock is passing near the nest-site. Various observers have noted the tendency for antbirds to devote more time to nest construction in the middle of the day than in the early-morning hours. The time required to complete a nest varies considerably from species to species, and also, probably, among individual pairs within a species. Skutch watched a pair of Plain Antvireos complete a nest in less than two days, but noted times of five to six days for Black-hooded Antshrikes, more than eight days for a pair of Checker-throated Antwrens, and nine to ten days for a pair of Russet Antshrikes. Oniki found that nest construction by Western Slaty Antshrikes commences about ten days before egg-laying. For many, if not most, species, there is a break of at least two days between nest completion and laying of the first egg, although the birds frequently add bits of fine, filamentous material to the lining even after incubation has begun.

The architecture of antbird nests not only provides fascinating natural history, but also offers a potential insight into phylogenetic history (see Systematics). Broadly speaking, antbird nests can be described as either "suspended" or "supported". Of the thamnophilid nests described to date, the most common type in numerical terms is a suspended open cup with a diameter equal to or greater than its depth, composed of vegetable matter such as grasses, twigs, dead leaves and plant filaments, and often lined with "vegetable horsehair", a blackish fungus (*Marasmius*) that resembles horsehair. Most often, these cup-nests are suspended by the rim from a horizontal fork in the outer branches of a tree or shrub, but sometimes they are slung from two touching branches which at the point of crossing resemble the bifurcation of a single branch; rarely, they are hung from two parallel branches. Suspended open cup-nests are built by antshrike species in the genera *Frederickena*, *Taraba*, *Sakesphorus*,



*Thamnophilus*, *Xenornis* and *Thamnistes*, by the "grey antwren assemblage" of *Myrmotherula*, by the Rufous-bellied and Plain-throated Antwrens, by the *Herpsilochmus*, *Microrhopias* and *Formicivora* antwrens, and by the Banded Antbird, the "nigricans group" of *Cercomacra* antbirds, the Spotted and Spot-backed Antbirds and the Wing-banded Antbird. Of all of these species, the Speckled Antshrike is the only one that is known to build its nest entirely of rootlets, although some species appear to construct cup-nests entirely of moss or lichen. In addition, in Panama, the Wing-banded Antbird has also been recorded as placing a new lining inside an old Western Slaty Antshrike nest that had been preyed on six months earlier.

Typically, the height above the ground at which these nests are placed corresponded to the foraging height of the species. Canopy-inhabiting *Herpsilochmus* antwrens, for example, place their nests high in the canopy and subcanopy.

Nests composed almost entirely of fine plant filaments are often so thin-walled that the contents are visible through the bottom of the cup. Such a loose construction may facilitate drainage and ventilation, important considerations in the humid and often very wet environments that many antbirds occupy. Cup-nests are frequently described as "deep" or "shallow", but such adjectives are not useful in characterizing antbird nests. Descriptions that include dimensions are needed in order to understand whether there is any constant and meaningful variation in the construction of suspended cup-nests.

Some species decorate the exterior of the suspended nest, usually with either dead leaves or moss, the material in some cases extended into a dangling "tail" that can hang a considerable distance below the cup. The use of bright green moss is particularly prevalent among antvireos of the genus *Dysithamnus*,

The largest antshrikes, such as the **Undulated Antshrike**, tend to have larger and more hooked bills which equip them for handling larger prey items such as orthopterans, mantises, and even small vertebrates. Antshrikes are known to catch and devour small lizards (mostly *Anolis* species, but also geckos), as well as frogs and snakes. When the item is a large insect, many antbirds will repeatedly beat it against a branch before methodically using the bill to remove any undesirable wings, legs or urticating spines.

[*Frederickena unduligera fulva*, Allpahuayo-Mishana Reserved Zone, Loreto, Peru.  
Photo: José Álvarez Alonso]





A small subset of thamnophilid species are known as "professional" ant-followers because they spend almost their entire lives following ants. Of the many New and Old World birds that follow ants, only a few woodcreepers (Dendrocolaptidae) match them in their nearly complete specialization in ant-following. This remarkable lifestyle has given the English name to the entire family. Of the true ant-followers, the **Bicoloured Antbird** is one of the commonest; here it is pictured on a low perch with the ground beneath it covered in army ants. These ants are diurnal, carnivorous, swarm-raiding nomads; huge numbers of them fan out along broad fronts hunting arthropods and small vertebrates, many of which are normally concealed in leaf litter and low vegetation. To escape the ants, these small creatures abandon their shelters and camouflage, and it is this mass of fleeing prey that attracts the antbirds. They wait at the head of the swarm, ready to pounce. Apart from the obligate army-ant followers, there are other species termed "regular ant-followers", which routinely follow ants but often forage away from them, while others again rank only as "occasional ant-followers".

[*Gymnophaps leucaspis*, Soberania National Park, Panama.

Photo: Marie Read]



This **Bicoloured Antbird** has successfully gleaned a morsel from the path of an antswarm. Regardless of whether they are "professional" ant-followers or not, most antbirds forage more efficiently at swarms than away from them. In the **Spotted Antbird** (*Hylophylax naevioides*), it was found that, when they hunted alongside swarms, individuals experienced a four-fold improvement in foraging efficiency, or at least a four-fold increase in foraging opportunities. This explains why so many species opportunistically join swarms when these pass through their territories.

[*Gymnophis leucaspis*,  
Soberania National Park,  
Panama.  
Photo: Marie Read]



which often not only cover the nest with this material but also leave a tail of it hanging from the bottom, thereby making the nest appear even more like a suspended clump of moss. The only known nest of the Pearly Antshrike had numerous dead leaves partially woven into the bottom of the cup in a messy fashion, and similar nests have been described for the Dusky-throated Antshrike. Further, the single known nest of the Scaled Antbird was a basket hanging from two parallel branches and with a "tail" of dead leaves five times longer than the height of the nest. It seems reasonable to assume that decorations serve to disguise nests by making them look like natural formations of vegetation.

The suspended nests of some antbirds are much deeper pouches that are more purse-shaped than cup-shaped, and most, if not all, of these are decorated. Three *Cercomacra* species of the "tyrannina group" have been found to build such nests. The Dusky Antbird, for instance, constructs a deep, pensile pouch with an oblique opening near the top, with thick walls of dead leaves, plant fibres, dead grass blades and strips of palm fronds, suspended by fungal strands from the fork of a slender, drooping tree branch, vine or climbing fern. One such nest was covered with green moss, with embedded long shredded fern stems, some hanging 46 cm below the nest, so that the whole resembled a ball of moss. Species of the "stipple-throated group" of *Myrmotherula* antwrens have a similar type of nest, this being most clearly evident in that of the Checker-throated Antwren, a deep, pensile pouch with an oblique opening, built largely of dead leaves and fine filaments. Nests of the closely related Rufous-tailed and Brown-bellied Antwrens have been described as being similar to the last, but more dome-shaped or oven-shaped, composed mostly of dead leaves and with a side entrance, and placed in small understorey saplings. Deep pouch-nests are also built by *Drymophila*, *Hypocnemis* and *Hypocnemoides* antbirds, although a few individual nests of these species have been described as a deep cup and, in one case, as approaching a dome in shape. Two additional groups of antwrens build nests that may fall into this category or into the previous one. Known nests of the "streaked antwren group" of *Myrmotherula* are typically likened to a bag covered with moss, and the dimensions available for one species suggest that they form a pouch rather than a cup. Only two nest descriptions are available for *Terenura* antwrens and these are

conflicting, even though the two species involved are closely related; one was described as a cup and the other as a pouch.

A number of other antbirds build cup-nests that sit atop substrates, rather than being suspended or pendent. Such nests account for about one-third of known thamnophilid nests, or 36 of 112 species. Supports include branches in trees; hollows along the basal portions of trees formed by vines wrapping around the trunk, by the junction with the trunk of leaf rachides or sheaves of small palms, or by epiphytic ferns; hollows in dead stumps and natural cavities of live trees; and dense vegetation such as a clump of sedge, root tangles, and leaf litter on the ground. Some thamnophilid species employ more than one of these types of support, although in such cases the situations are closely similar. Of all these supported nests, those resting on branches appear to be the least common. The nest of the Giant Antshrike has been described as a very large cup untidily made of stalks, grasses, *Tillandsia*, leaves and fibres, like that of a *Turdus* thrush, and placed on a solid base of branches. The Cinereous and Bluish-slate Antshrikes construct a deep, leafy cup entirely of dried rotten leaves, rhizomorphs and fine rootlets, and internally lined with finer plant fibres and dried leaves. They build this into aerial piles of leaves and debris accumulating at junctions of large branches of live and fallen trees, but they also use similar accumulations along trunks of palms and other large-leaved trees and between the tree trunks and vines. The exterior of such nests presents a disarrayed appearance that simulates a pile of dead leaves lodged in the understorey. The only known nest of the Spot-winged Antshrike looked like a pile of large leaves, similar to a Cinereous Antshrike nest; it was under construction in a tangle of branches up in a tree, where it could not be determined whether it was suspended or supported, although it appeared to be resting on branches.

As noted above, nests of Cinereous and Bluish-slate Antshrikes are often placed along trunks of palms and other trees, usually within a few metres of the ground. Where they join the trunk, rachides of fronds and spines of small palms, especially of the genera *Bactris*, *Oenocarpus*, *Sheelea* and *Astrocarum*, provide attractive nesting sites. Antbirds that take advantage of such sites seem often to use other sites as well. Two deep cup-nests of Plumbeous Antbirds were found attached to palm spines, and





So far as is known, nearly all antbirds are monogamous, pair for life, and defend year-round territories that are often stable in position and dimension, year after year. Within these territories, antbirds usually attempt to breed between one and three times annually. The accompanying portraits show adult **Scalloped Antbirds** (the male above) at one of the few nests ever described. These nests have all been hidden cups placed on the ground, constructed primarily of dead leaves, and lined with *Marasmius* fibres, fine stalks or leaf veins. They were all placed on platforms of dead leaves; two were situated in tangles of sedges; one was partially covered by the leaves of a shrub and bordered by a vine; the one seen here was the most open in location. In general, the most terrestrial antbirds, like this species, can be expected to nest on or close to the ground.

[*Myrmeciza ruficauda* soror, Alagoas, Brazil.  
Photos: Anita Studer]



This is a predator's eye view of the male **Scalloped Antbird** incubating at the same nest as in the previous photos. Despite the fact that the nest is not covered, and despite the illumination provided by a camera flash, the sitting bird is very inconspicuous. As with virtually all birds, the efficient concealment of nests is vital in maintaining reproductive success above the threshold necessary for survival.

[*Myrmeciza ruficauda soror*,  
Alagoas, Brazil.  
Photo: Anita Studer]



another was placed among the fronds of an epiphytic fern. A White-shouldered Antbird nest was a deep cup partially covered with leaves and placed between the leaf rachides of a palm. Cup-nests of the Scale-backed Antbird have been found against trunks at the bases of palm fronds, but also in hollow stumps and on the ground; the possibility has to be considered that various populations of this widespread species utilize different kinds of nest-site. White-plumed Antbird cup-nests have been found sunk deep in debris on the growing tops of small palms less than 2.5 m tall, but also in the midst of sedges and herbs just off the ground. Shallow cup-nests of Hairy-crested Antbird have been discovered not only in palm-frond sheaths left on the trunk after the fronds have dropped, but also inside a stump. These examples suggest that antbirds which nest in hollows and recesses in vegetation close above the ground are flexible and opportunistic in the type and location of the space that they utilize.

Palms, along with trees of other families, also function as nest-sites when their trunks are broken off, leaving a hollow stump where debris collects. It was in this type of location, where the still extant rachides of palm leaves joined the stump, that the only known nest of the Bare-crowned Antbird was found, built of twigs, leaves and strips of palm fronds that were arranged to form a dome. In addition to the two species mentioned in the previous paragraph, the *Gymnopithys* antbirds nest in hollow stumps or stubs, and one atypical nest of the Bicoloured Antbird was in the hollow end of a large, upturned, fallen palm leaf. These nests often have a thin lining of rhizomorphs, to which the birds may continue to add through the incubation period.

Finally, a large number of antbirds nest on or just off the ground in leaf litter or other organic debris, tree roots, ferns or low herbaceous vegetation. Ground nests of antbirds of the genera *Pyriglena*, *Myrmoborus* and *Pernostola*, and a probable one of *Rhopornis*, have been described as oven-shaped or domed; typically, the nest is a sphere of leaves, petioles, twigs and/or rolled sheaths of bamboo, with finer fibres in the inner layers, and with an entrance to one side and sometimes at an angle above the horizontal. These nests are usually raised slightly off ground

level by being placed on a bed of debris, fallen branches, roots, a slight rise in the terrain or, in one case, the remains of an old nest. Many *Myrmeciza* antbirds also build on or near the ground, some of them constructing an open cup; other species, however, partially cover the cup with leaves, and, as F. A. Wilkinson and U. R. Smith carefully described, the Sooty Antbird extends the leafy cover to form a sphere and adds a short entrance tunnel. The one known nest of the Black-throated Antbird, a cup, was found, remarkably, sunk into a clump of sedge surrounded by water. In drier country, the only documented nest of the largely terrestrial Stripe-backed Antbird was an open cup of dry grasses, placed on the ground.

As noted in the preceding paragraphs, many of the low-lying supported nests of antbirds are covered, forming what have been described as domes, chambers, partially roofed cup-nests, and the like. For a number of genera, however, sample sizes are too small and most descriptions too vague for the nest architecture to be classified with sufficient certainty for use in systematic studies. Improvement of knowledge of antbird nest architecture is an important task for future field ornithologists.

Almost all antbird species normally lay two eggs, with individual clutches of one or three eggs being rare. Three eggs do, however, represent a typical clutch of the Variable and Rufous-capped Antshrikes, and possibly of the Great Antshrike, in the southern portions of their ranges in Argentina, extreme southeastern Brazil and southern Bolivia. These species make seasonal movements in some of these regions (see Movements), and larger clutch size is perhaps an adaptation to the risks inherent in migration. The Wing-banded Antbird in the monotypic genus *Myrmornis* may normally lay just one egg; in French Guiana, Tostain found one nest with a single egg and has observed eleven pairs of Wing-banded Antbirds escorting single fledglings, many of them not yet capable of flight.

Antbird eggs are larger at one end than at the other. They have a ground colour varying from white to light pink and to buff, and with variable amounts of brown, reddish, maroon, purple, grey or black spotting, blotching, streaking, scrawling or other



markings, sometimes evenly distributed, but more often concentrated in a wreath around the larger end. For the few species the nesting of which has been studied, the normal pattern seems to be for eggs to be laid two days apart, with incubation commencing upon completion of the clutch.

Both sexes develop brood patches and share in incubating the eggs. So far as is known, only females incubate during the night. The male usually relieves the female early in the morning, and incubates for a prolonged period. This is followed by one or more midday rotations, before the male takes over for a lengthy afternoon shift. Some time before dusk, the female returns and settles on the nest for the night. In seven species of antbird studied by Skutch, the number of diurnal incubation sessions ranged from two, one by each sex, in one pair of White-flanked Antwrens and three, two by the male, in the Great Antshrike, to ten, of which seven were by the male, in the Dusky Antbird. Male and female Spotted Antbirds took three sessions apiece, whereas males of the Plain Antvireo and the Western Slaty Antshrike each took one more turn than their mates. There was a larger disparity between male and female Chestnut-backed Antbirds, in which the males took five shifts and the females only two. In the case of the Great Antshrike, incubation stints by males ranged from 146 to 238 minutes and one stint by the female lasted 239 minutes. At one nest of White-flanked Antwrens a single shift by the male was 134 minutes long and one by the female at least 33 minutes, while at another nest the male incubated for 3 to at least 174 minutes and the female for 98-140 minutes. For other species, the time ranges of incubation shifts, in minutes, for males and females, respectively, were 33-142 and 53-66 for Western Slaty Antshrikes, 103-147 and 41-79 for Plain Antvireos, 11-153 and 79-124 for Dusky Antbirds, 45-95 and 92-136 for Chestnut-backed Antbirds, and 44-217 and 36-164 for Spotted Antbirds. The largest discrepancy between the sexes in total amount of time dedicated to diurnal incubation was found in the Plain Antvireo, the male's contribution being 325 minutes more than the female's. Conversely, the male Spotted Antbird spent only 11 minutes more in daytime incubation than did the female. In the other species studied by Skutch, the discrepancy ranged from 145 minutes in the Great Antshrike to 95 minutes in the White-flanked Antwren. When the unbroken nocturnal shift of the fe-

males is taken into account, however, the female contribution to incubation remains as the more significant one.

Skutch also tracked intervals of neglect at each of the above nests. In the 11 hours of observation at the Great Antshrike nest, the birds left their eggs unattended only once, for a period of 17 minutes. This translates into 97% attendance, calculated as the percentage of time for which the eggs were incubated during the period between the end of the female's nocturnal shift and the beginning of the next one. The Plain Antvireo pair left its clutch unattended eight times, totalling 45 minutes, giving 95% attendance. Other attendance values were 94% for Western Slaty Antshrikes, 76% for one pair of White-flanked Antwrens and 50% for the other pair, 82% for Dusky Antbirds, 87% for Chestnut-backed Antbirds, and 92.5% for Spotted Antbirds. Of these, only the White-flanked Antwren stands out as having significantly lower nest attendance than the other species. This may be linked to its habit of foraging with mixed-species flocks, which takes it to distant parts of its territory for long periods of time. None of the other species studied by Skutch was a habitual flock-member. For obligate army-ant followers, patterns of incubation can probably be deduced from the presence or absence of one member of a known pair at ant swarms.

Oniki has contributed some of the most comprehensive data on the incubation behaviour of thamnophilids. In her study of Western Slaty Antshrikes in Panama, she found that the two sexes contributed nearly equally to daytime incubation. She noted one particularly long session, when a female remained on the nest for 4 hours and 33 minutes, from 12:42 to 16:55 hours; on the next day, the male incubated from 11:45 to 15:27, whereafter the female took over and sat from 15:28 until 06:58 hours on the following morning, a phenomenal shift of 15 hours and 30 minutes. Willis and Oniki found that sitting antshrikes sometimes called from the nest during long incubation sessions. In a similar study of Chestnut-backed Antbirds, they noted that daytime incubation sessions lasted up to 217 minutes for the female and over 236 minutes for the male, with respective averages of 119 and 113 minutes; recesses ranged from 1 to 117 minutes, and averaged 16.5 minutes. The female incubated for 40% of the daylight hours and the male for 48%, and nest attendance was 88%, increasing to 93% in the last eight days before hatching. In a study of White-



Breeding in antbirds is an egalitarian endeavour. Both sexes contribute to nest-building, sometimes in equal measure, although it is often the male whose contribution seems greatest.

This male **Slaty Antwren** is inspecting his work: a deep cup of black fungal rhizomorphs, thinly woven, bound by cobwebs, and suspended by its rim from a couple of branches. While this structure is typical of the "grey antwrens", the "stipple-throated antwrens" use dead leaves to build a deep, pensile pouch, and the "streaked antwrens" tend to make neater, mossier, more bag-like pouches. Nest design can provide useful taxonomic clues.

[*Myrmotherula schisticolor*  
schisticolor,  
Monteverde Forest  
Reserve, Costa Rica.  
Photo: Michael Fogden/  
DRK]



The **Uniform Antshrike** is fairly common and widely distributed in the Andean forests of Colombia, Ecuador and Peru.

Despite being relatively abundant and easy to find, almost nothing is known about its breeding biology. Indeed, these photographs are the only details on record.

It is worth noting, however, that from these two images we can deduce some useful information. First, we can note that the species has placed this nest low down in tangled vegetation.

Second, we can see the basic structure of the nest: a deep suspended cup of fibres (normal for the genus *Thamnophilus*), surrounded on the outside with a layer of moss, which is probably added to provide both insulation and camouflage. Third, we can tell that the male contributes to incubation.

Fourth, we can see that on this occasion, at least, the clutch consists of two eggs, as is normal for almost all antbirds.

Fifth, these eggs are creamy white with numerous large blotches and small spots of brownish-purple, lavender or red, clustered loosely into a wreath encircling the blunt end. Details such as these help to build a picture of reproductive strategies, nest design and egg characteristics throughout the family, a picture that is starting to provide useful insight into natural history and taxonomic relationships. This example serves as a reminder of just how little is known about the basic biology of South American birds, and it underscores the important contribution that can still be made by field ornithologists.

[*Thamnophilus unicolor grandior*,  
La Planada Nature Reserve,  
Nariño, Colombia.  
Photos: Patricio Robles Gil]







In common with most *Myrmeciza* antbirds, the **White-bibbed Antbird** builds its nest on or near the ground, usually in a clutter of dead branches or on a thick mat of leaves. In structure, the nest is an untidy bowl of plant stems and fibres, very loosely woven, and randomly interposed with the leaves of trees and bamboo. The finish is deliberately ramshackle, and clearly an adaptation for camouflage: the nest resembles nothing more than a heap of fallen debris. Even the pale supercilia and boldly tipped coverts of the incubating female, so striking in the field, seem to mimic the lines and broken tips of twigs, thus breaking up her outline.

[*Myrmeciza loricata*, Penedo, Rio de Janeiro, Brazil.  
Photo: Dante Buzzetti]

backed Fire-eyes in Brazil. Oniki found the average incubation interval by females to be 205 minutes, while the figure for males was 148 minutes; female fire-eyes incubated for 48.5% of the daylight hours and males for 41.6%.

As with so many aspects of reproductive biology, the incubation period is not known for the majority of antbirds. For those for which information is available, a period of 14-16 days, calculated from the onset of incubation, is typical. Known exceptions include the Great Antshrike, with an incubation period of 17-18 days, and the Checker-throated Antwren and the Dusky Antbird, for both of which the period is 18-20 days. The last two have a deep pouch-nest that perhaps allows a longer incubation period, with lower risk of predation. When disturbed from the nest, incubating antbirds often drop to the ground and perform frantic, fluttering distraction displays. Those species with white interscapular patches flare these, an effective way of catching a would-be predator's attention. When the young hatch, the parents carry the eggshell fragments away from the nest and discard them.

In contrast to the young of formicariid ground-antbirds, which are covered with down at hatching, thamnophilid antbirds hatch naked, helpless and blind. The skin colour varies from dark pink to dusky grey and to nearly black. In some species, the eyes remain closed for the first two or three days, while in others, such as the Spotted Antbird, the nestlings may open their eyes late on the same day as they hatch. By the day after hatching, the buds of pin-feathers may be visible through the thin skin; by the second or third day the first pin-feathers are erupting, and they grow rapidly. Feather development is usually faster on the dorsal surface than on the ventral surface. The two parents share in brooding the young. As with incubation, only females brood during the night, and by day male antbirds tend to brood more than do females. Brooding attentiveness is highest during the first few days, when the naked young are incapable of regulating their own body temperature. For example, one or the other adult of a pair of Chestnut-backed Antbirds watched by Willis and Oniki brooded for 84% of the diurnal hours on the first day after hatching. At this

time, each feeding trip by either parent is usually followed by a brooding session. Faecal sacs of nestlings are typically consumed by the parents in the first two days, but thereafter are carried away from the nest and discarded.

Daytime brooding sessions diminish in frequency and duration with each passing day, until they eventually cease. In the case of the Chestnut-backed Antbirds studied by Skutch, brooding decreased by the sixth day, and at one nest there was no brooding at all on the eighth day. For Western Slaty Antshrikes, Oniki found a similar marked reduction in brooding after day 6, with no diurnal brooding after day 7 or 8. Great Antshrikes, however, continue daytime brooding through at least the ninth and tenth days. Females continue to brood through the night, even after daytime brooding has been discontinued.

Both parents share in the task of feeding the nestlings. Typically, they deliver larger prey to the nestlings, a habit that may reduce the number of required feeding trips to the nest and, therefore, decrease the risk of drawing the attention of predators. The parents usually remove and eat the appendages and head of larger prey before delivering them to the chicks, particularly during the first few days after hatching. Oniki observed that the two sexes of Western Slaty Antshrikes provided similar food, except that females captured grasshoppers more often, and males caught caterpillars or larvae more often; she also found that males tended to bring larger prey items than did females. It is not known if similar sexual differences in the types and sizes of prey brought to nestlings exist among other species of antbird, but such resource-partitioning is known to occur in many other families of birds.

At 13 nests of nine thamnophilid species monitored by Skutch, the combined feeding rates of the parents ranged from one trip per hour at one nest each of the Great Antshrike and the Black-hooded Antshrike, to 5.3 trips per hour at a Plain Antwren nest. The male and female seldom visit the nest simultaneously to feed nestlings. Typically, one parent makes a trip and then, depending mainly on the age of the nestlings, either stays to brood or leaves, with the other parent making a separate trip





Some antbirds decorate the exterior of their nests, usually with dead leaves or bryophytes, or both.

**Plain Antvireos**, like other members of the genus *Dysithamnus*, seem particularly inclined to use fresh moss.

They sometimes extend this material into a "tail" that dangles below the cup, thereby increasing its similarity to the myriad other clumps of moss hanging in the forest.

In this species, both sexes develop brood patches and take turns incubating the eggs. It is thought that the overnight shift is always undertaken by females, while males counterbalance their lack of nocturnal input by doing the bulk of incubating in daylight.

These observations match those for a variety of species throughout the family, although in many cases the contribution to diurnal incubation is roughly equal despite the females' incubating at night.

[*Dysithamnus mentalis*  
*septentrionalis*,  
Monteverde Forest  
Reserve, Costa Rica.  
Photos: Michael Fogden/  
DRK]







The **Rufous-winged Antshrike** is typical of the genus *Thamnophilus* in that both sexes co-operate to build a suspended cup-nest low above the ground, in a fork between branches. The construction process can take up to 13 days. During this time, the walls of the nest are solidly woven from fine grass stalks, rootlets and black *Marasmius* fibres, sometimes with the incorporation of flowers, bits of moss and bark fibre, or even on occasion man-made oddments such as wool, twine and balls of cotton. Although both sexes incubate the eggs, the male seems to invest most time incubating during daylight while the female incubates overnight. After 15 days, the eggs hatch.

[*Thamnophilus torquatus*, Alagoas, Brazil.  
Photos: Anita Studer]



At the same nest, this male **Rufous-winged Antshrike** is delivering food to his young. As well as dividing the burden of incubation, both sexes of most antbirds share the task of providing nestlings with food. Typically, adults devour any small food items that they find, and only deliver larger items directly to the nest. This habit reduces the number of required feeding trips and, therefore, decreases the risk of attracting the attention of predators. If the food item is particularly large, the parents usually remove and eat any appendages, such as wings or heads, before delivering the juicier portion to the chicks.

[*Thamnophilus torquatus*,  
Alagoas, Brazil.  
Photo: Anita Studer]



some time later. Oniki recorded low feeding rates by both sexes of Western Slaty Antshrikes prior to 08:00 hours and again after 16:00 hours. Presumably, this reflects a need by the adults to spend some time in the early morning in replenishing their own nutrient reserves following a night without feeding, as well as the need to store energy before roosting for the night. It may also be influenced by lack of light in the forest both early in the morning and late in the afternoon, making insects difficult to see and, therefore, diminishing foraging efficiency. Feeding rates for White-backed Fire-eyes were also low in the morning, but rates at each nest differed from one day to the next. They did not increase significantly as the young grew, with periods of 49, 63 and 50 minutes between feeds on the first three days at one nest, and 25, 36, 39, 24, 25 and 23 minutes between food deliveries on six consecutive days at another nest. This contrasts with the behaviour of Spotted Antbirds observed by Willis, who found that feeding rates increased greatly after the hatch day, but decreased slightly on the last day before fledging. At six nests, the average of 19 intervals between feeds of two nestlings by both parents was 18 minutes on the day of hatching; 43 such intervals on days 4 and 5 averaged 11 minutes, 67 intervals on days 6 and 7 averaged 12.5 minutes, 88 intervals on the next two days averaged 5.6 minutes, and 38 intervals on days 10 and 11 averaged 9.4 minutes. High feeding rates on days 8 and 9 were associated with the parents foraging near the nest. During the time when these nests were watched, male Spotted Antbirds made 185 feeding trips, compared with 108 by females. Visits by the two sexes were nearly equal up to the fifth day, with 44 by males and 47 by females; at all but one nest, however, female attentiveness waned thereafter, females making 61 visits, as against 141 trips by males. Oniki recorded a similar general pattern in the feeding rate of Rufous-throated Antbirds: the number of feeds averaged 1.4-1.5 per hour until the nestlings were 5-6 days old, then increased in the morning to 3.3-4.4 per hour until the young were 8-9 days old, before decreasing again to a rate of 1-1.8 per hour until the chicks fledged, at 13-14 days. Willis recorded feeding behaviour at a nest of Bicoloured Antbirds observed over

53.6 hours: 68 intervals between feeds by the male averaged 38 minutes in duration, with a similar figure of 41 minutes for 52 feeding intervals by the female; ten intervals between feeds when the nestlings were 1-2 days old averaged 43 minutes; and the average of 120 intervals when the young were 7-13 days old was 19 minutes, with little daily variation.

Some species may greatly accelerate feeding rates under certain circumstances. At a nest of Dusky Antbirds observed by Skutch, both parents remained away for 101 minutes, an exceptionally long time for no feedings. When finally the female arrived, she fed the nestlings, and she proceeded to make five more feeding trips in the next 24 minutes, during which time the male also returned and began accelerated foraging trips. In 69 minutes, the young were fed 17 times by the female and six times by the male, a combined rate of 20 feeds per hour, which was more than four times the average that Skutch had previously recorded at this nest. At the peak of food delivery, the parents made nine visits in 15 minutes. Willis and Oniki found that Spotted Antbirds also greatly speed up the rate at which they deliver food after the first nestling fledges. At one nest, the male attended to the first fledgling, leaving the female to tend the remaining chick, which did not leave the nest until the following morning; on that final morning, the brooding female slipped off the nest at 06:15 hours, and began feeding the nestling at a pace of once every 2.9 minutes from 06:31 until 07:01, at which point the young bird left the nest. Apart from this exceptional sequence, 30 intervals between feeds at other Spotted Antbird nests where a single parent fed one remaining nestling averaged 10.7 minutes in duration, barely longer than the average figure when both parents are feeding two nestlings. The chick that remains in the nest is essentially fed at almost twice the rate that it was before its sibling left, even though only one parent is doing the feeding.

In the Thamnophilidae, the nestling period is seemingly more variable than is the incubation period. It may last up to 13 days in the case of the Great Antshrike and 15 days for the Bicoloured Antbird, but can be as short as 8-9 days for the White-flanked, Dot-winged and Rusty-backed Antwrens. The size of the adult



bird is not always directly correlated to the length of the nestling period: the average period for the small Spotted Antbird in Costa Rica is 11-12 days, longer than that for the much larger Black-hooded Antshrike, which is 10-11 days.

In the few species for which fledging has been studied, the young usually leave the nest separately, at intervals ranging from minutes to a day, the slightly older sibling probably being the first to leave. In response to calls of one or both parents, a nestling calls back, and then hops up on to the rim of the nest, where it balances for seconds or minutes, sometimes stretching its wings, before fluttering to the ground. The attending parent immediately coaxes it away from the nest and into protective cover. From this point onwards, the fledgling is cared for exclusively by the parent that was present at the moment of its departure from the nest. The other parent assumes sole responsibility for the remaining nestling, and, as was demonstrated by Spotted Antbirds, may greatly accelerate its rate of food-provisioning, hastening the development and departure of the second chick. Brood division probably simplifies the task of keeping track of scattered nestlings that are hiding in dense vegetation, and, by allowing the young to disperse, probably also reduces the risk of predation of the entire brood. Because the breeding cycles of most antbirds remain unstudied in any detail, it is not known if brood division is the rule for the entire family. It is the case for the Western Slaty and Black-hooded Antshrikes, the White-backed Fire-eye, and the Black-headed, Chestnut-backed, Spotted and Bicoloured Antbirds.

When there is only one fledgling, either as a result of predation or because only one egg was laid, it is normal for one parent to assume most or all of the responsibility for it. Willis found that, in 15 cases in which only one fledgling White-backed Fire-eye survived, the adult female was the primary guardian of the young bird in twelve instances, whereas the male took on this role in only three cases. Conversely, males of White-plumed and Spotted Antbirds were more likely than females to be the primary guardians of sole surviving fledglings. With the Wing-banded Antbird in French Guiana, how-

ever, both parents accompany the single fledgling, both before and after it is able to fly.

Upon leaving the nest, young antbirds usually remain relatively immobile in the concealing cover of the undergrowth for the first few days. As they become stronger, and more capable of flight, they may, at the urging of their parents, be led to safer stations much higher above ground. The adults of species that normally follow mixed flocks may leave the fledglings to forage for a time with the flock, returning eventually to feed them. Oniki has recorded bob-tailed young Western Slaty Antshrikes feeding with their parents in mixed-species flocks just five days after fledging. At 28-32 days out of the nest, the young antshrikes, one of which was moulting from brown female-like plumage to grey male plumage, were still being fed frequently by the parents, and at 38-42 days they foraged clumsily in mixed-species flocks with them. Gradually, the young catch more and more of their own food, and leave their parents soon after the latter stop feeding them. With Western Slaty Antshrikes, this occurs about 50-60 days after leaving the nest. In the case of the White-backed Fire-eye, it is probably about 30 days after the start of incubation when the young first appear at ant swarms. At this stage they are still short-tailed, but nearly of adult weight, and already have their adult colours (black in males, brown in females). They tend to remain in cover near the periphery of the swarm, and are fed by their parents. By 15 days later, the tail is grown, and they often hop and forage clumsily near the ants, but still obtain most of their food from their parents. By another 15 days later, the young fire-eyes are obtaining most of their own food, but some individuals will continue to be fed, at least occasionally, some 45 days after abandoning the nest.

Juveniles of many antwrens may remain with their parents even longer. Skutch recorded juvenile Checker-throated Antwrens associating with their parents for up to three months, and a juvenile Dot-winged Antwren still begging at four months. Gradwohl and Greenberg observed immature White-flanked, Checker-throated and Dot-winged Antwrens associating closely with their parents even after the adults had started to nest again,



In contrast to the young of ground-antbirds (Formicariidae), which are covered with down at hatching, thamnophilid antbirds hatch naked, helpless and blind. The skin colour of hatchlings varies from dark pink, as in this **Slaty Antwren**, through dusky grey to nearly black. By the day after hatching, the buds of pin-feathers may be visible through the skin; after two or three days the first pin-feathers erupt, and thereafter they grow rapidly. For the first few days after hatching, the chicks are almost constantly brooded. As with incubation, both parents share in brooding, the females brooding at night, and males usually contributing more time during the day.

[*Myrmotherula schisticolor schisticolor*, Monteverde Forest Reserve, Costa Rica. Photo: Michael Fogden/Animals Animals]





Typically, the nest of the **White-backed Fire-eye** is a bulky sphere of dried leaves, petioles, twigs and sometimes rolled sheaths of bamboo, accessed by a side entrance. The whole structure is usually raised slightly above ground level by being placed on a bed of debris, fallen branches or roots. The oven-like design is unusual amongst antbirds, and is found in two other genera that are thought to be closely related to the fire-eyes: *Myrmoborus* and *Rhopornis*. This is one example in which similarities in nest architecture support the taxonomic conclusions drawn from analyses of morphology. Both parents feed the nestlings, arriving with food approximately every 50 minutes for one chick, or every 25 minutes for two chicks. As well as insects, the adults are known to bring small lizards to the nestlings, but only when the latter are more than 4 days old.

[*Pyriglena leuconota pernambucensis*, Alagoas, Brazil.  
Photos: Anita Studer]







Recent field studies have shown that nestling **Black-hooded Antwrens** are brooded by both sexes, and receive a diet of small caterpillars and other arthropods. After 10-11 days, they are ready to leave the nest. The Black-hooded Antwren is the subject of a remarkable conservation story. After an absence of records spanning over one hundred years, the species was rediscovered in 1987. Despite spending much of the intervening century languishing in the wrong genus, and despite being erroneously thought of as a montane bird, it had survived all along on a heavily populated stretch of coast in south-east Brazil. These facts go to prove how easily antbirds – even ones as distinctive and attractive as this – can be overlooked, especially if people happen to be looking in the wrong direction! Through the efforts of those field ornithologists that strove to relocate it, and then through the work of conservationists, biologists and photographers, the Black-hooded Antwren has finally been rescued from anonymity. This portrait of an adult male feeding his offspring is a tribute to their efforts, and a symbol of hope, not only for this species, but for many other elusive birds that have so far evaded rediscovery.

[*Formicivora erythronotos*, Rio de Janeiro, Brazil.  
Photo: Luiz Claudio Marigo]





or had raised other broods. This was especially true of White-flanked Antwrens, pairs of which were often accompanied by recently fledged juveniles, as well as by older subadults from the previous brood. The known extreme in the duration of parent-young bonds among the Thamnophilidae is found in the complex clan system of the Ocellated Antbird and the apparent second-year helpers at the nest of Black-spotted Bare-eyes (see Food and Feeding).

Willis's studies of Bicoloured Antbirds reveal a complex transition from fledging to independence. When young of that species first leave the nest, they hide in dense foliage well removed from the ant swarms at which their parents feed. The adults commute to and from the swarms to feed the fledglings, each parent assuming responsibility for just one of its offspring. By two weeks after leaving the nest, the young have grown sufficiently that they can alight on vertical stems without falling off. They now begin to follow their parents, which encourage them with "leading" behaviour. In addition to specific vocalizations, leading may involve the deliberate showing of food items to young in order to attract their attention, after which the adult flutters to another perch in an attempt to entice the young forward. Finally, the fledglings are led to the edge of ant swarms, where, at four weeks after leaving the nest, they forage clumsily alongside their parents, while often continuing to beg for food. At this age they have poor powers of discrimination, and frequently peck at still objects such as knots on tree roots or tips of twigs, and pick up and carry around small twigs or leaves. Slowly, the youngsters begin to peck at slow-moving arthropods such as sowbugs, and eventually to sally after larger and faster-moving prey. In all supplanting encounters (see Food and Feeding) the young bird is subordinate, except when these encounters involve its sibling. Older birds do not even waste time in "challenging" obvious juveniles, but supplant them without postural or vocal prelude. The longer the young bird remains at the swarms and forages for itself, the more it is subjected to supplanting attacks by older birds. If the juvenile begs from the "wrong" parent, the one other than that which has attended it since fledging, it is likely to be supplanted. Bicoloured Antbirds fledge with a brown belly, in glaring contrast to the white-bellied adults, and three weeks later they begin the transition to adult plumage, becoming gradually whiter on the underparts. As this transition progresses, the parents be-

come increasingly hostile toward the young, and frequently supplant them. Willis noted antbirds seven and eight weeks after fledging being regularly supplanted by their parents, but also, at least occasionally, being fed by them. Conversely, one juvenile, when it was only six weeks past fledging, started to follow a different swarm from that attended by its parents. After independence is achieved, the young bird wanders from swarm to swarm, maintaining a nomadic existence until such time as it is able to attract a mate.

The time between successive nestings by the same pair of antbirds is largely dependent on the outcome of the first nest. A pair that successfully fledge its young will be occupied for anything from weeks to months with the feeding and care of the still maturing fledglings. Pairs that lose the clutch or brood to predators or to some other disaster typically reneest as quickly as possible. Oniki monitored a pair of Western Slaty Antshrikes that had three unsuccessful nests between late June and late August. The interval between the loss of one nest and the commencement of the building of the next one was one day and, at most, four days; for the second and third breeding attempts, respectively, the interval between the loss of the previous nest and the start of the next clutch was about 14 days and about nine days. In Trinidad, a pair of Plain Antvireos was incubating at a second nest only 12-15 days after the first nest had been preyed on, and laying in a third nest followed 26-28 days after the eggs in the second nest had been lost. Pairs of Spotted Antbirds have been recorded as starting construction of a second nest within five to seven days of the last fledgling from the previous brood achieving independence, and pairs will, in some cases, begin reneesting even before the previous brood is fully independent. When Spotted Antbirds lose a nest to predation, the pair reneests immediately, within four days in two recorded cases. The interval between loss of a nest and reneesting is about ten days for White-backed Fire-eyes studied in Brazil. In the same population, the interval between a successful nest and reneesting is about 50 days. As with fire-eyes, White-plumed Antbirds regularly nest more than once per year, and Black-crested Antshrikes in Surinam have been documented as nesting twice in the same year, using the same nest. Conversely, Willis never found Bicoloured Antbirds to nest successfully twice in the same year, although pairs which lost a nest to predation made repeated attempts to

Research on the **Black-hooded Antwren** concluded that slightly less than one egg in four was likely to end up producing a fledgling. This, however, does not signal the stage at which the parents' duties end. In the few species for which the fledging stage has been studied, the young usually leave the nest separately. After fluttering down from the nest's rim, the first fledgling is immediately coaxed towards protective cover by its parent. From this point onwards, it is cared for exclusively by the adult that was present at the moment of its first flight. The other adult assumes sole responsibility for the remaining nestling, even after it fledges.

[*Formicivora erythronotos*,  
Rio de Janeiro, Brazil.  
Photo: Luiz Claudio Marigo]





Although the **Squamate Antbird** is endemic to the Atlantic Forest Lowlands EBA, it is not considered threatened with extinction. This is because it is generally fairly common and appears to flourish in selectively logged forest. Moreover, it occurs in several protected areas, such as the Serra da Bocaina National Park and the Serra do Mar State Park, as well as some privately protected properties such as Fazenda Capricornio, near Ubatuba, and Fazenda Intervalles, near Capão Bonito. Continued protection of these parks and reserves should ensure the long-term survival of this species.

[*Myrmeciza squamosa*, Cantareira, São Paulo, Brazil. Photo: Edson Endrigo]

renest; the interval between loss of a clutch or brood and the laying of the first replacement eggs varied from five to 19 days.

Nest success is generally low among antbirds, as is the case for most small forest birds that nest near the ground. Predation is the major factor in breeding failure, but, since it is rarely observed, the identity of the predators is open to question. The most frequent ones are likely to be snakes, and these are suggested as the culprits whenever the contents of a nest disappear without signs of disturbance to the nest, and without a trace of feathers or eggshell fragments. Mammals, particularly nocturnal ones, have also been implicated in many instances of predation on antbird nests. Unlike snakes, which swallow nest contents whole and leave the nest intact, mammalian predators typically rip the nest apart in their efforts to get at nestlings, eggs or sitting adults.

Most of the studies of nest success and predation of thamnophilids have been conducted in Panama. Unfortunately, many of these are from Barro Colorado Island, which, like other forest fragments, has artificially high rates of predation (see Status and Conservation). In one study of Western Slaty Antshrikes on Barro Colorado, only 10% of 32 nests successfully fledged one or more young. Results were better in a study in mainland Panama, with 46% of 54 nests successful in one year and 21% of 81 nests in the other year, although these percentages drop to 40% and 19% respectively if only those nests found during the building, laying or incubation stage are considered. Spotted Antbirds on Barro Colorado Island suffer heavily from predation: in one study, only six of 24 nests found before or during egg-laying reached the hatching stage; altogether, only 16 broods of young were reared from 84 nests found at various stages and followed until the outcome could be determined. Conversely, nest success of this species at sites in mainland Panama varied from 38% to 50% over two years; for those nests found in the building, laying or incubation stages, the figures were 28% and 39% for the two years. Ocellated Antbirds had particularly low success on Barro Colorado, with 87% of recorded nests unsuccessful. In one study from mainland Panama, no more than two out of 20 nests of Dusky Antbirds fledged young, with 17 of the remaining 18 being preyed on, while only 22.2% of 18 White-flanked Antwren nests were successful. Success of Checker-throated Antwren nests varied from 27.5% to 30.8% over two

years, but was lower, 14.3-25.5%, if only those nests found during the building, laying or incubation stages were counted. Similarly, of eleven nests of Dot-winged Antwrens, four fledged young, six were preyed on, and the outcome of the other was unknown. Chestnut-backed Antbirds fared equally poorly: young were successfully reared from only one of four nests in Costa Rica and from just one of six in Panama.

Unfortunately, there are very few comparable studies of nesting success of antbirds outside Panama and Costa Rica. In a study of Barred Antshrikes in Argentina, 33% of nests failed, while all five nests of Blackish-grey Antshrikes found in French Guiana were lost to predation, with arboreal snakes suggested as the likely predators.

The eight-year study of Dusky Antbirds by Morton and Stutchbury in mainland Panama revealed that the probability of reproducing successfully was no more than 8%, although varying substantially from year to year. The annual survival rate was 82%, and those authors concluded that a long lifespan was the key to lifetime reproductive success.

Brood parasitism by Shiny Cowbirds (*Molothrus bonariensis*) has been reported for Collared Antshrikes in Ecuador and Peru, and for Great, Rufous-capped and Variable Antshrikes in Argentina and southern Brazil. Most thamnophilids, however, being birds of the forest interior, probably do not suffer such problems from cowbirds. Nestling antbirds are subjected to a different type of parasitism, in the form of parasitic flies and biting insects. Nestling White-backed Fire-eyes and Black-spotted Bare-eyes have been found to be particularly common hosts of botfly larvae (Gasterophilidae), possibly because the type and location of their nests provide the humid micro-climates that are especially attractive to mosquitoes and parasitic flies.

For most of the Thamnophilidae the time of first breeding is not known, but it is probably about one year. Females of some of the obligate ant-following species have been found to breed earlier than males. Female White-plumed Antbirds, for instance, probably breed for the first time when they are only 6-8 months old. Even more precocious are female Bicoloured Antbirds, which regularly pair when they are just 4-6 months of age; Willis found one female which paired and produced eggs when she was only six-and-a-half months old. In contrast, male Bicoloured Antbirds



normally remain unpaired until they are at least one year old, although one ringed individual was known to have formed a brief, two-month, pair-bond with a female when he was no more than 7-9 months of age. Pair-bonds between Bicoloured Antbirds usually begin when an unmated male starts to feed a newly independent, younger female. Observed patterns of pair formation by this species may be influenced by the skewed sex ratio found on Barro Colorado Island, where males outnumbered females by 1.7 to 1, assuring a surplus of unmated males seeking to establish bonds with young females. It is not known if the sex ratios on Barro Colorado are typical for the species as a whole.

The oldest known wild-breeding antbird was a female Plain Antvireo in Trinidad, which was still nesting eight years after having been ringed as an adult. Otherwise, a ringed adult male Dusky Antbird was recaptured in Panama when it was at least 13 years old; nesting at that age, although considered probable, was not proven.

### Movements

The Thamnophilidae are notably sedentary birds. With few exceptions (see Breeding), all species pair for life, and defend territories throughout the year. The majority of forest-dwelling antbirds are reluctant to cross even small open areas, and, as a result, even narrow roads through forested terrain often sharply delimit territories. Two species, the Rufous-capped and Variable Antshrikes, appear to undertake seasonal movements at the extreme southern edges of their distributions, in Argentina. Some evidence from ringing studies suggests that the Great Antshrike makes similar seasonal shifts in N Argentina, although that species is presumed to be resident throughout the greater part of its range. Otherwise, there is nothing to indicate that antbirds undertake migratory movements.

A few bamboo specialists inhabiting the Atlantic Forest of eastern Brazil may move locally in response to large-scale, episodic die-offs of *Merostachys* bamboo. In Itatiaia National Park, in Rio de Janeiro, Brazil, after one such die-off in 1984, all avian bamboo specialists living at 900-1200 m disappeared, and many did not return until 1990, when the bamboo had regrown suffi-

ciently (see also Status and Conservation). Antbirds that appear to be affected by such die-offs include the White-bearded Antshrike and the Ochre-rumped, Rufous-tailed and Bertoni's Antbirds.

### Relationship with Man

Despite their abundance and ubiquity throughout much of the Neotropics, antbirds have little relationship with man. They are not hunted, nor are they kept as cagebirds, and they are not agricultural pests of fields or orchards. Other than a few conspicuous species, such as the Barred Antshrike and the Black-crested Antshrike, which occupy mostly second-growth and edge habitats and even enter yards and gardens, antbirds remain unknown to the vast majority of people who live within their ranges. On the other hand, indigenous peoples and those who depend on an intimate relationship with the forest are often well aware of the antbirds, particularly those species that follow army ants.

Explorers and naturalists since the time of Alfred Wallace and Henry Bates have taken notice of and been fascinated by the relationships of antbirds to the impressive swarms of army ants. To this day, the two avian phenomena that most enthrall nature-orientated visitors to the Neotropics are the spectacle provided by a bird-attended army-ant swarm, and the dazzling chaos of a large mixed-species foraging flock, both of which are frequently centred upon multiple species of antbird. Thamnophilidae is one of the most species-rich families of Neotropical birds, and many antbird species, through their rarity and/or elusive habits, present real challenges to would-be observers. As such, they are frequently among the species most sought after by travelling birdwatchers, and are thus indirectly helping to fuel the burgeoning industry of ecotourism throughout much of Central and South America.

As objects of scientific inquiry, antbirds have provided important examples for man's still evolving theories of biogeography, adaptive radiation and speciation. They have been central to investigations into ant-following by birds, the cohesion and structure of mixed-species flocks, and resource-partitioning, as well as research into the unique contributions of river islands, bamboo and white-sand habitats to tropical avian diversity.

The **Chestnut-crested Antbird** is a restricted-range species present in the Orinoco-Negro White-sand Forests EBA.

Although this taxon was virtually unknown until the mid-1990s, several recent records have greatly extended its known range in Brazil. Despite the fact that it is considered highly sensitive to human disturbance, this species is probably secure meantime, mainly because forests within its range are under little development pressure. Importantly, it has been found in Jaú National Park, Brazil, within whose vast area it currently receives protection.

[*Rhegmatorhina cristata*,  
El Dorado Lodge,  
Vaupés, Colombia.  
Photo: J. S. Dunning/  
VIREO]







Over recent decades, the Atlantic Forest of south-east Brazil has suffered severe habitat loss through urbanization, logging and agriculture. As a result of these activities, a dramatic decline must have taken place in the populations of endemic bird species. One of these, the **Spot-breasted Antvireo**, is considered Near-threatened, failing to meet the criteria for fully threatened status because it remains common in foothill forests. At these higher altitudes, habitat is under slightly less pressure, and much of it is protected within reserves.

[*Dysithamnus stictothorax*, Itatiaia National Park, Rio de Janeiro, Brazil. Photo: J. S. Dunning/VIREO]

Thamnophilids have also been a major element for scientists studying the importance of vocalizations and behaviour in determining species relationships and reconstructing phylogenies, the effects of logging and forest fragmentation on vertebrate populations, and a wide range of other topics.

For all of this, antbirds remain important to man primarily for aesthetic reasons. As indicators of unspoilt forest, as phantom voices emanating from behind dense curtains of tropical greenery, as creatures that can be both frustratingly elusive and remarkably confiding, and as reminders that there are still many mysteries of nature that we have yet to understand, the antbirds, as much as any other group of birds, evoke and symbolize the most bird-rich forests on the planet for those fortunate enough to have experienced them.

### Status and Conservation

Antbirds are too small to be hunted, and, as mostly drably coloured insectivores with relatively simple songs, they are not targeted for commercial exploitation as cagebirds. Rather, the primary conservation threat for virtually all thamnophilids is habitat destruction. Most antbirds are relatively common within their ranges. The lowland evergreen forest which constitutes the primary habitat for most antbirds is still extensive in much of Amazonia and, despite ongoing clearance, remains one of the least threatened biomes. Nevertheless, rapid deforestation proceeds unabated in many regions, and, if current trends continue, future threats will materialize where none currently exists. The effects on forest-inhabiting birds of clear-cutting and subsequent conversion to cattle pasture and large-scale agriculture are obvious. Most antbirds are averse to crossing roads, rivers and other small discontinuities in otherwise continuous forest. They shun the light and the edge, sticking mainly to the dense cover of the interior. Wholesale forest destruction leaves such birds with no viable options. Less obvious, but worthy of attention, are the effects of forest fragmentation and selective logging, which have been detailed in several studies.

The Biological Dynamics of Forest Fragments Project (BDFFP), a joint initiative of Brazil's National Institute for Re-

search in Amazonia and the US Smithsonian Institution, has generated many data on the effects of forest fragmentation on forest birds, including many antbird species. The BDFFP sites are located north of Manaus, in the heart of Amazonian Brazil. Implemented in 1979, the project has studied the effects of forest fragmentation by creating forest isolates of different sizes, such as 100 ha, 10 ha and 1 ha, which, over time, were surrounded by different-aged stands of second growth ranging from open pasture to tall *Cecropia* woodland. The project is unique in that solid baseline data are available from the sites before isolation from continuous forest took place. In a study of the effects of fragmentation on understory birds, Stouffer and S. H. Borges showed that obligate mixed-flock species and terrestrial insectivores were among those worst affected. The Dusky-throated Antshrike, the Brown-bellied Antwren and the Long-winged Antwren, three mixed-flock core species common in continuous forest and 100-ha fragments, were never mist-netted in 1-ha fragments. Two nuclear species, the Cinereous and the Dusky-throated Antshrikes, and a core species, the Brown-bellied Antwren, ranked seventh, eighth and ninth, respectively, among the ten most commonly mist-netted species in continuous forest, but these did not rank in the top ten in isolates of 100 ha or 10 ha. All of these flock regulars were nearly absent except in 100-ha fragments or in continuous forest. Rufous-bellied Antwrens appeared to be restricted to continuous forest, and did not persist in fragments of any size. Scale-backed Antbirds still utilized 10-ha fragments, but were much more common in continuous forest and 100-ha fragments. Populations of terrestrial-foraging insectivores were also strongly reduced by forest fragmentation, sometimes to the point of local extinction. This was the case for furnariid leaf-tossers (*Sclerurus*), formicariid ground-antbirds and gnateaters (*Conopophagidae*), as well as for the thamnophilid Ferruginous-backed Antbird. Interestingly, data from the same forest fragments showed that most groups of leaf-litter arthropods were more abundant along edges and in smaller fragments than in the interior of large fragments, so that the disappearance of terrestrial-foraging birds from forest fragments did not appear to be related to a reduction in prey. The obligate ant-following White-plumed Antbird and Rufous-throated Antbird ranked, respectively, first and fourth among the ten most commonly mist-netted species in continuous forest, and





A remarkable community of *Drymophila* antbirds is found in the Atlantic Forest. In a small area of south-east Brazil, for example, six species can be found at incremental altitudes: the Scaled (D. squamata) and Dusky-tailed Antbirds (D. malura) lower down; the Ferruginous (D. ferruginea) and Ochre-rumped Antbirds (D. ochropyga) at mid-elevations; and Berton's (D. rubricollis) and the Near-threatened **Rufous-tailed Antbird** at high elevations. In a narrow altitudinal band between 1150 m and 1300 m the latter four species sometimes share the same bamboo thickets.

[*Drymophila genei*, Itatiaia National Park, Rio de Janeiro, Brazil. Photo: Edson Endrigo]

third and sixth in the 100-ha fragments, but were nearly absent from plots of 10 ha and 1 ha. These two species did move through tall *Cecropia*-dominated second growth, which was rarely used by mixed-flock antbirds. The White-flanked Antwren, a species which commonly joins mixed-species flocks but is not a core species, declined less strongly in the smaller fragments. The Warbling Antbird, the Black-headed Antbird and the Black-throated Antbird, all light-gap and edge inhabitants, were the only thamnophilids that were more common in forest fragments and mature second growth than in continuous forest.

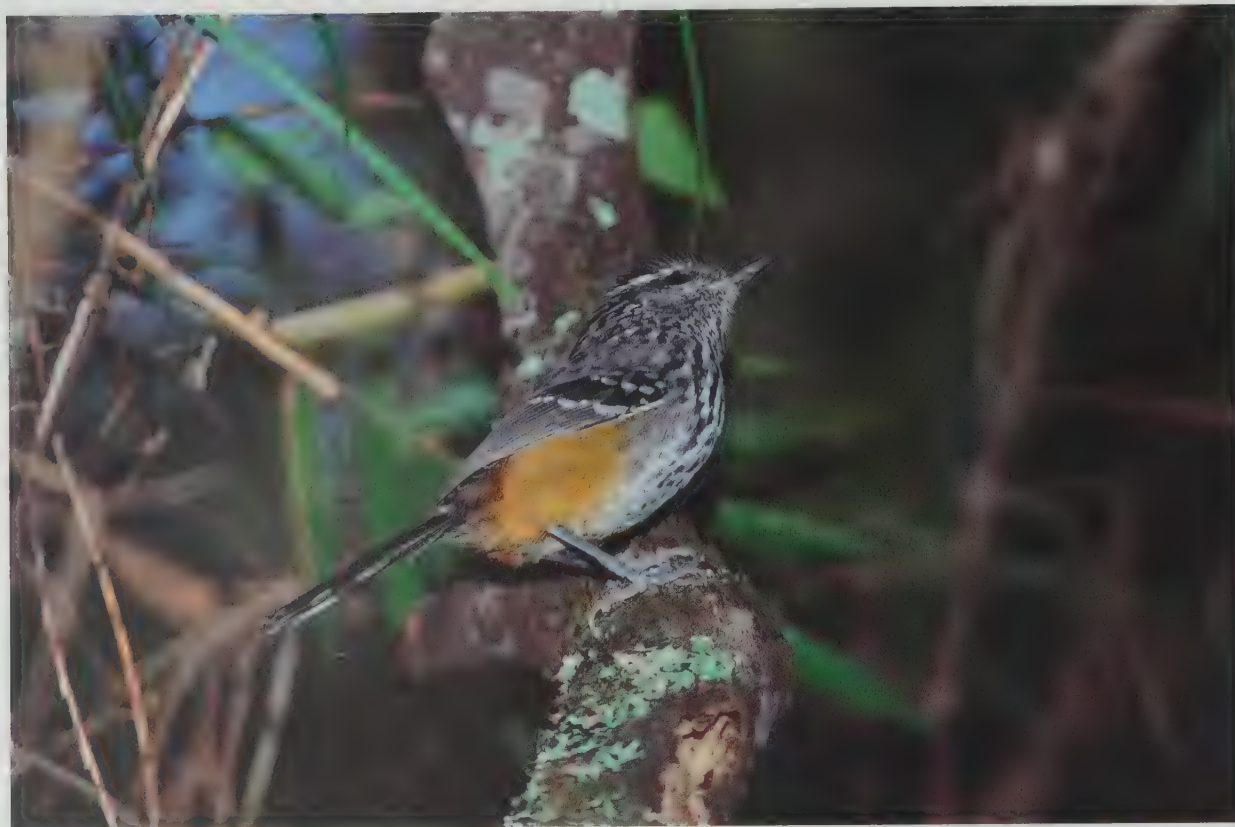
Intensified nest predation has been demonstrated to be an important factor in the decline of birds breeding in fragmented-forest landscapes, both tropical and temperate, with rates of nest loss calculated to be inversely proportional to the size of the forest fragments. Intensified nest predation is thought to result largely from an increase in small and medium-sized predators in forest patches through immigration from surrounding deforested areas, and from a reduction in the populations of bigger carnivores the home ranges of which are larger than the forest fragments. Increased predation pressures have been implicated in the extirpation of numerous bird species from Panama's Barro Colorado Island. When the River Chagres was dammed in 1914 in order to fill the Panama Canal, Gatun Lake was created; forested hilltops and ridges became islands in the lake, isolated from one another and from extensive tracts of "mainland" forest. Barro Colorado, the largest island in Gatun Lake, is well known ornithologically, and has been used as a model for research on insular populations. Of twelve ground-foraging insectivorous bird species that have historically bred on the island, eight are now locally extinct, one of these being the Ocellated Antbird. In addition, populations of Bicoloured Antbirds declined by half during an eleven-year period. Dramatically higher predation rates have been recorded, and experimentally confirmed, on Barro Colorado Island in comparison with nearby unfragmented mainland forest.

In one field experiment, K. E. Sieving tested the hypothesis that interspecific differences in nest design and placement could account for differential avian extinction on Barro Colorado. Using 200 artificial nests, carefully constructed to simulate the design and placement of five model species, which included three thamnophilids, the Chestnut-backed, Spotted and Bicoloured

Antbirds, and with quail (*Coturnix*) eggs simulating the standard two-egg clutches of the models, Sieving demonstrated not only much higher predation pressures on the island compared with the mainland, but also that species-specific nest design and placement were important determinants of differential nest predation. This finding did not, however, directly account for patterns of species extinction. Of the simulated nests of the five model species, those of Spotted Antbirds constantly suffered the highest losses to predators on both island and mainland sites; yet Spotted Antbirds have maintained their population levels on Barro Colorado, whereas the Streak-chested Antpitta (*Hylopezus perspicillatus*), the simulated nests of which suffered the least predation, disappeared from the island in 1971 following a period of steady decline.

Sieving's results suggested that nest-design and nest-placement strategies may determine the capacity for clutch replacement, so that species which experience less predation pressure under natural conditions do not have the behavioural and physiological capability for rapid re-nesting in response to predation. When relegated to forest fragments with much more intense predation pressure, populations of such birds may be unable to produce replacement clutches fast enough to keep up. Conversely, such species as the Spotted Antbird, with a nest design and placement that subjects them to constantly high predation under natural conditions, have the capacity for rapid re-nesting, and, thus, a higher tolerance of inflated insular predation pressure. Indeed, Willis estimated that pairs of Spotted Antbirds living on Barro Colorado Island were re-nesting up to ten or twelve times per year before producing a single brood of fledged young. Species such as the Streak-chested Antpitta, the Ocellated Antbird and, seemingly, the Bicoloured Antbird are unable to match the predators clutch for clutch, and eventually become extinct within the fragment. Besides the evolutionary implications of this particular example, the conservation lessons from Barro Colorado give cause for concern for the future of species living in fragmented landscapes. Among antbirds, the prospects are particularly dire for species having current populations already confined to a handful of small, isolated reserves, where, presumably, the same sorts of inflated predation pressure are at work.





The **Ochre-rumped Antbird** has specialized habitat requirements within a tiny range. It lives in dense stands of bamboo and vine-tangles, usually high in the mountains of south-east Brazil, but locally also in the adjacent lowlands. Although it is probably adequately protected in several parks and reserves, episodic large-scale die-offs of bamboo may result in periodical fluctuations in local populations of this and other bamboo specialists, and their status should be monitored carefully. This species, too, is listed as *Near-threatened*.

[*Drymophila ochropyga*,  
São Lourenço da Serra,  
São Paulo, Brazil.  
Photo: Edson Endrigo]

Clear-cutting and forest fragmentation are only the most obvious threats to forest ecosystems. Selective logging is an increasingly common timber-extraction process that has been shown to have an impact on populations of many forest birds, particularly antbirds. A. D. Johns, in a study of the effects of logging on forest bird communities in Pará, Brazil, found that certain groups of species could be taken as indicators of a stable avifauna, reflecting an undisturbed or late-stage successional habitat, and gave as an example a high species richness of terrestrial antbirds. The most important trends that he detected were a decrease in the abundance of terrestrial insectivores and a decrease in bark-gleaning and foliage-gleaning insectivores in proportion to the degree of disturbance by logging. In his study, the frequency of observation of antbirds of the families Thamnophilidae and Formicariidae dropped from 17.9% of the sample in unlogged forest to 13.5% in logged forest and to 0.9% in *capoeira* (second growth). Of 21 thamnophilids, 17 were found to decrease in logged forest compared with unlogged forest, whereas only four, the Fasciated and White-shouldered Antshrikes and the Black-faced and Scale-backed Antbirds, were found to increase. The particular sensitivity of terrestrial and understory species to logging has been demonstrated in multiple studies. The micro-habitat conditions of low light and high humidity in the understory are greatly affected by logging, whereas canopy conditions remain relatively less altered.

D. Mason studied the effects of selective logging on understory bird populations in the Imataca Forest Reserve of south-eastern Venezuela. His was the first study to document the effects of two tropical silvicultural treatments, one of these being so-called "enrichment strips" and the other vine-cutting. Where forest management is approached as an ongoing process, rather than as a one-time extraction, silvicultural treatments may be applied to increase the volume of commercially harvestable wood. Enrichment strips are cleared and then planted with nursery-grown saplings of commercial, and often non-native, tree species. In some locations, these strips are cleared with bulldozers, which scrape the topsoil and inhibit natural regeneration. Trees felled to create the strips are pushed into the adjacent forest, damaging other trees. The other treatment applied to some of the logged forests was the cutting of all woody vines at ground level; vine removal has been shown to increase tree growth rates and to re-

duce the incidence of stem deformity. Mason found that understory bird assemblages were strongly affected by most forestry practices. Bird assemblages in selectively logged forest were significantly different from those in primary forest, and the changes were even greater where enrichment strips were created. By contrast, bird assemblages where vines were cut were similar to those of unlogged forest. Most understory species were insectivores, and the majority of these declined in abundance following logging. The most diverse family of understory birds was Thamnophilidae, 20 species of which occurred in unlogged forest. Four of these, the Northern Slaty Antshrike, the White-flanked Antwren and the Dusky and White-browed Antbirds, increased in abundance following logging; the numbers of two others remained the same, while 14 species declined. Three of the species that declined were not recorded in logged forest; these were the Black-throated Antshrike, the Long-winged Antwren and the Spot-winged Antbird. Even more dramatic changes occurred in logged forest with enrichment strips, where six primary-forest species were not recorded; these were the previous three, along with the Brown-bellied Antwren, the Grey Antwren and the Wing-banded Antbird. Two obligate army-ant followers regularly recorded in the area, the White-plumed Antbird and the Rufous-throated Antbird, were only slightly less common in logged forest, but they were significantly less common where enrichment strips were created.

Mason's study also provided some clues as to the proximate causes of change in species abundance in response to the various logging treatments. Because his study area included forests that had been logged for years as well as others that had only recently been logged for the first time, Mason was able to look at temporal responses of the birds to the logging. Although the microclimate changes are likely to take place immediately after tree removal, many of the effects on the bird communities did not develop until years after harvesting. Four months after logging, the understory structure and its avifauna were similar to those of primary forest, even though the canopy was much more open. Five to six years after logging, the understory vegetation was twice as dense as that of primary forest, and the bird assemblages were significantly different. Of the measured factors, understory forest structure correlated best with changes in bird communities. Many of the understory insectivores, including antbirds,



A Near-threatened  
thamnophilid is the  
**Black-tailed Antbird.**

Not only is it a várzea specialist, but it is patchily distributed and apparently scarce in a small range, chiefly in the drainages of the Marañón, Ucayali and upper Amazon Rivers of northern Peru. Although there is no immediate threat from habitat loss in the region, the flooded-forest ecosystem is vulnerable to deforestation owing to its accessibility along watercourses.

More survey work is required to locate viable populations, which should then be protected within appropriately sited várzea reserves.

[*Myrmoborus melanurus*,  
Callarú River,  
Loreto, Peru.  
Photo: J. S. Dunning/  
VIREO]



are foraging specialists, and selective logging may reduce the amount of foraging habitat for these birds, many of which require a more open understorey in which to seek food.

Another study, by J. M. Thiollay, investigated the effects of selective logging on avian species diversity in lowland forests in French Guiana. Thiollay found that, in the understorey of mature stands, the mostly terrestrial species, including ant-followers, were among the species most affected, closely followed by members of mixed flocks and solitary insectivores. Each of these guilds decreased after logging by over 50%. Among the most affected species, obligate army-ant followers, in this case the White-plumed and Rufous-throated Antbirds, eventually disappeared from the later stages of logged forest. The dominant small insectivores of the understorey, the usual members of mixed-species flocks, were among the most numerically depressed species. These included the *Thamnomanes* antshrikes and the *Myrmotherula* antwrens. Consequently, the understorey mixed-species flocks themselves became rare in logged forest. A few species increased after logging. Among antbirds, these included the Northern Slaty Antshrike, the Black-headed Antbird and the Black-throated Antbird, all of which are more typical of forest edge, light-gaps and secondary woodland. The species that disappeared after logging are typical of primary forest, and are usually rare or absent from other habitats, which makes them of special concern when designing conservation strategies.

Of the 209 species of thamnophilid antbirds, 25, or 12%, are currently considered by BirdLife International to be globally threatened. Eleven of these are categorized as Vulnerable and ten as Endangered, and the status of four species is considered Critical. An additional nine species are considered Near-threatened. Moreover, 59 members of the family qualify as "restricted-range species", each having a global range encompassing less than 50,000 km<sup>2</sup>.

Some general trends are evident among these species. Most have very restricted ranges, limited by habitat or geography, and all are declining in numbers. Of the total of 34 threatened or near-threatened thamnophilids, as many as 21 are found nowhere outside Brazil. These are the Rondonia Bushbird, the Plumbeous Antvireo, the Alagoas, Klages's, Rio de Janeiro, Salvadori's, Unicoloured and Band-tailed Antwrens, the Pectoral and Bahia Antwrens, the Marsh Antwren, the Narrow-billed, Restinga and

Black-hooded Antwrens, the Orange-bellied Antwren, the Rufous-tailed and Ochre-rumped Antbirds, the Rio de Janeiro Antbird, the Fringe-backed Fire-eye, the Slender Antbird and the Scalloped Antbird. A further three species, the White-bearded Antshrike, the Spot-breasted Antvireo and the Rio Branco Antbird, are near-endemics of Brazil. Of these 24 Brazilian antbirds, all but three are confined to the Atlantic Forest, to the *caatinga* and the deciduous forests of the north-east, or to other restricted habitats in the narrow coastal strip. An estimated 80-85% of the Atlantic Forest that was present in the sixteenth century, when



**The Narrow-billed  
Antwren** is considered  
Vulnerable to extinction.  
It is found in mata-de-cipó  
(or "liana forest"), a type of  
dry forest characterized  
by low-stature trees, vine  
tangles and terrestrial  
bromeliads. Wherever  
mata-de-cipó is left  
standing, this species is  
usually fairly common, and  
it would not be threatened  
were it not for the  
devastating rate at which  
such habitat is being  
destroyed. There are still  
no protected areas within  
its range, a situation that  
desperately needs  
to be rectified.

[*Formicivora iheringi*,  
Aracuaí,  
Mato Grosso, Brazil.  
Photo: Edson Endrigo]





Europeans arrived, had been destroyed by the 1970s. What was historically a largely intact forest covering more than 1 million km<sup>2</sup> is now dominated by several of the biggest centres of human population on the continent. This history of human settlement and environmental devastation has left the Atlantic Forest region by far the most endangered of all biogeographical regions in the Neotropics. The Atlantic Forest region harbours the third largest concentration of endemic birds in the Neotropics, roughly 200 species. Thirty-one of these are thamnophilid antbirds, over half of which, 18, are currently threatened or near-threatened. A number of the remaining ones can be considered to be at some level of risk.

Most of the threatened antbirds of eastern Brazil are forest species. For many of these, a string of parks and reserves stretching from southern Bahia to Rio Grande do Sul, and south inland into southern Paraguay and Argentina, provides some measure of protection. Many of these reserves, however, are small and isolated, rendering their bird populations vulnerable to edge and island or peninsula effects, which include increased predation, lack of immigration, reduced gene flow and increased inbreeding depression. Furthermore, most of the existing parks, particularly the larger ones, in the Atlantic Forest protect montane habitats, whereas the lowland forests, to which more endemic species are restricted, are only minimally protected. The most endangered species are those restricted to lowland-forest remnants. Of these, the Alagoas Antwren, the Rio de Janeiro Antwren and the Fringe-backed Fire-eye have been given the conservation status of Critical. The Alagoas Antwren is known from a single fragmented patch of remnant ridgetop forest at Murici, in the state of Alagoas. The forest at this site has been reduced from 70 km<sup>2</sup> in the early 1970s to less than 30 km<sup>2</sup> in 2000. This forest and scattered similar patches that may be found to harbour the species are surrounded by a virtual sea of sugar-cane plantations. Although the Murici forest has recently been declared a protected area, it remains privately owned, and selective extraction of timber was going on as recently as January 2002. Furthermore, fires spreading from adjacent plantations are constantly eroding the boundaries of the forest. Populations of the Alagoas Antwren are thought to number fewer than 1000 individuals, and are assumed to be declining.

The Rio de Janeiro Antwren is known from a single specimen mist-netted in a patch of secondary forest in central Rio de Janeiro state in 1982. Subsequent to its discovery, the species went unrecorded for more than a decade. Since 1994, there have been regular reports from the Guapi Açu Ecological Reserve, in

the foothills of the Serra dos Órgãos, but some controversy remains as to whether these pertain to the Rio de Janeiro Antwren or to a local variant of the race *luctuosa* of the White-flanked Antwren. Regardless of the identification of the Guapi Açu antwrens, it is clear that, given the near-total destruction of lowland forest on the coastal plain below the Serra dos Órgãos, and the failure to locate additional populations despite much effort, the Rio de Janeiro Antwren must, at best, occupy a tiny range and have a very small population.

The Fringe-backed Fire-eye is known from a highly restricted area in coastal Bahia and southern Sergipe. Many sites at which it was judged common in the 1970s either have been deforested or no longer harbour fire-eyes. Although this species, unlike most forest antbirds, is capable of persisting in patches of second-growth woodland, it is clearly declining throughout its small range, and extant population reservoirs are highly fragmented and isolated from one another. The total population is estimated at fewer than 1000 birds and declining.

For each of these three Critically threatened antbirds, immediate action is needed in order effectively to protect known populations. In addition, surveys of surrounding areas, aimed at locating and protecting additional sites where the birds may occur, are an urgent priority.

The White-bearded Antshrike presents a special case. It occupies lowland and foothill Atlantic Forest from the state of Rio de Janeiro, in Brazil, south-westwards inland to north-east Argentina. Within this range, suitable habitat is highly fragmented, a situation that is likewise facing all other Atlantic Forest endemics. The problem of habitat fragmentation for the antshrike is exacerbated by its apparent dependence on extensive stands of large-leaved bamboos, probably in particular those of the genus *Merostachys*, which are characteristic of the montane Atlantic Forest. These bamboos undergo periodic local die-offs, forcing bamboo specialists to move elsewhere. After one such event in Itatiaia National Park, in 1984, when the 12-m-tall *Merostachys* died en masse, all such specialists within an elevational range of 900-1200 m disappeared, and many did not return until 1990, by which time the bamboo had regrown to heights of 5 m or more. These episodic die-offs, and the lengthy regeneration periods that follow, create large spatial and temporal discontinuities in the availability of suitable habitat for such birds as the White-bearded Antshrike. As a buffer against cyclic perturbations of their environment, specialists of this kind probably require areas of contiguous habitat that are larger than average.



The **White-bearded Antshrike** is rare throughout its small Atlantic Forest range. It is made susceptible to extinction by its reliance on patches of bamboo, particularly of the genus *Merostachys*, which is known to undergo episodic local die-offs. These die-offs result in large geographical and temporal discontinuities in the availability of suitable habitat, a situation exacerbated by rampant forest fragmentation. The species requires large reserves with extensive stands of bamboo at a variety of elevations.

[*Biatas nigropectus*, Cruce Caballero National Park, Misiones, Argentina. Photo: José & Adriana Calo]

Thirty-four species of antbird are considered threatened or Near-threatened with extinction. Of these, 21 are endemic to Brazil. One such species is the **Pectoral Antwren**, which occupies a fragmented range in the country's dry north-east. It lives in gallery forest, deciduous woodland and tall caatinga, habitats that are rapidly being cleared for firewood and charcoal, and to make way for agriculture. This process is reducing its population to dangerously low levels. It only receives protection at one site, the Itabaiana Reserve in Sergipe; other reserves are required.

[*Herpsilochmus pectoralis*, Jeremoabo, Bahia, Brazil. Photo: Kevin Zimmer]



Not all of the threatened antbirds of eastern Brazil are Atlantic Forest endemics. The Slender Antbird is restricted to *mata-de-cipó* forests (see Habitat) in a small area of eastern Bahia, while the Narrow-billed Antwren occurs primarily in the same habitat, but with a slightly more extensive range that includes northern Minas Gerais. Both species are locally fairly common in appropriate habitat, particularly around Boa Nova and Jequié, in Bahia, but the dry forests of this region are being rapidly cleared for cattle pastures and coffee plantations, and much of the remaining *mata-de-cipó* has been degraded by removal of wood for fence posts, firewood and charcoal production, or by livestock grazing the understorey. Numerous calls have been made for the creation of a *mata-de-cipó* reserve near Jequié or Boa Nova, but to date this unique habitat remains unprotected.

Of the Amazonian and Guianan antbirds for which lowland evergreen forest is the primary habitat, only six are currently listed as threatened or near-threatened. These are the Cocha Antshrike, the Rondonia Bushbird, Klages's Antwren, the Ancient Antwren, the Rio Branco Antbird and the Black-tailed Antbird. The Allpahuayo Antbird, not described until 2001, must also be added to this list. It is known only from Loreto, in north Peru, where it is recorded from the drainage of the Río Nanay west to the left bank of the Río Tigre. It is an extreme habitat specialist, occurring primarily in a very dense and stunted *terra firme* forest of a type known locally as *varillal*, and also, to a lesser extent, in a nutrient-poor habitat known as *irapayal* (see Habitat). The Allpahuayo Antbird seems to be restricted to these two habitats, as evidenced by its apparent absence from intensively investigated areas between Iquitos and the Río Napo which lack them, and which lie immediately east of the known range. Unless it is discovered elsewhere, this antbird must rival the Marsh Antwren for the dubious distinction of occupying one of the most specialized habitat niches within the smallest geographical range of any thamnophilid. The habitats in which the Allpahuayo Antbird is found are locally distributed, and are subject to intense human exploitation in a region of rapid population expansion. Both *varillal* and *irapayal* are heavily exploited to provide poles and thatch for building materials to support increasing human settlement in the Iquitos region. A vital conservation action was the recent establishment by the Peruvian government of the Zona Reservada Allpahuayo-Mishana. This new reserve encompasses much of the known range of the Allpahuayo Antbird, and holds many other white-sand specialists, such as the near-threatened Ancient Antwren, the conser-



vation status of which is dependent on many of the same factors as affect the Allpahuayo Antbird.

Known solely from a single female specimen and two sightings of males, all in 1986, at Cachoeira Nazaré, on the west bank of the Río Jiparaná in Rondônia, Brazil, the Rondonia Bushbird is an enigmatic species. Five experienced observers spent 1400 hours and amassed 1450 net-days at the type locality over a five-month period, with only the single mist-net capture and two sightings as evidence of the bird's existence. An additional 250 hours and 375 net-days at a similar locality 70 km distant, but not separated by any apparent barrier, produced no further sightings. There have been no confirmed records of the species since 1986, and its conservation status is Critical. Next to nothing is known of the natural history of the Rondonia Bushbird, but nothing about the type locality, nor the circum-



Another threatened antbird endemic to the Atlantic Forest of east Brazil is **Salvadori's Antwren**, currently classed as **Vulnerable**. It is restricted to lowland forests in the coastal stretch from southern Bahia to northern Santa Catarina. The huge human population pressure means that most forest in this zone is under threat, especially the lowland forest, which is the most accessible and attractive for development schemes. In this sense, the extensive Serra do Mar State Park and other reserves have a most important part to play.

[*Myrmotherula minor*, Ubatuba, São Paulo, Brazil.

Photo: Edson Endrigo]

The **Bicoloured Antvireo** is currently classed as **Vulnerable**. This is largely because its mid-elevation habitat in the Andes of Colombia and northern Ecuador has been severely affected by logging, conversion to livestock farming and clearance for crops, principally coffee and naranjilla. The best known population is found on the Guacamayos Ridge, and nearby at Volcán Sumaco, Ecuador. Large areas of pristine forest survive in this region, some of it nominally protected within Sumaco-Galeras National Park.

[*Dysithamnus occidentalis punctitectus*, Guacamayos Ridge, Ecuador.  
Photo: Joe Fuhrman/VIREO]





For over six decades the only thing masking the **White-masked Antbird** was mystery. Proof of its existence rested on a single specimen, collected in 1937 in one of the remotest corners of Amazonia. Due to shifting borders and an ambiguity regarding place names, it was never entirely certain whether the type locality lay in Peru or Ecuador. In the end, the species went so long unobserved, despite several intensive searches, that its taxonomic status was called into question. It began to be assumed that it must be a hybrid between the White-plumed Antbird (*Pithys albifrons*) and some other thamnophilid whose identity was difficult to guess. On account of these views the taxon was eliminated from recent assessments of threat status. Only in 2000 was the enigma finally unmasked. The species was found to be a "professional" ant-follower, and relatively common in white-sand forests in far northern Peru. In view of its highly restricted range, its habitat preferences and its ecology, its status must be considered of critical concern. It would receive important protection within Santiago Comaina Reserved Zone, although it is discouraging to note that local opposition to this reserve has been reported.

[*Pithys castanea*,  
Santiago Comaina  
Reserved Zone,  
Loreto, Peru.  
Photo: José Álvarez Alonso]



The **Band-tailed Antwren** is considered Endangered, principally because it is confined to humid Atlantic Forest in the extreme lowlands of south-east Brazil.

This forest type is precisely the habitat that is most vulnerable to clearance for urbanization, agricultural expansion, settlement and road-building. The species survives in a few reserves, such as those at Sooretama and Monte Pascoal, and it is therefore vital that these sites receive strict and long-term protection.

[*Myrmotherula urosticta*, Ituberá, Bahia, Brazil.  
Photo: Pedro Lima]



stances of the capture and two sightings, suggests that it is confined to a specialized habitat in the way that the Allpahuayo Antbird and the Ancient Antwren are. Instead, the bushbird seems to be a genuinely rare, low-density species. In the 1980s, Rondônia had the fastest rate of deforestation in Brazil, a result of government programmes that encouraged human settlement of Amazonian frontier regions. By 1983, 5% of the forest in Rondônia had been destroyed, almost all of it since 1970, and completion and paving of the highway joining Porto Velho to south-east Brazil accelerated human settlement and forest clearance. Although the initial wave of settlement and road-building has waned, commercial logging operations in the region have increased, and an estimated 4000 km<sup>2</sup> of forest are being cleared each year in Rondônia. Even the type locality of the bushbird is the site of an ongoing hydro-electric project. Surveys aimed at rediscovering the bushbird and identifying its principal ecological requirements, followed by effective protection of key sites, are clearly required.

Although the Cocha Antshrike, following its initial discovery in 1926, was not recorded again for much of the rest of that century, it was finally rediscovered, in 1991, at Imuyacocha, very near the type locality, in the Ecuadorian province of Napo. It has subsequently been found to be fairly common along black-water drainages in the region, and, although the species has yet to be found outside Ecuador, it seems likely that it could occur in adjacent Colombia and Peru. While oil exploration and extraction, and the inevitable deforestation that accompanies these activities, present possible threats to the lowland avifauna of eastern Ecuador, the Cocha Antshrike is probably at little near-term risk, given the lack of suitability of its habitat for agricultural development. Similarly, Klages's Antwren was long known only from specimens, these collected near Santarém, near the mouth of the Rio Tapajós, in Brazil. Around 1990, it was rediscovered on river islands in the Anavilhanas Archipelago in the Rio Negro, north-west of Manaus. Surveys of the archipelago, which is formally protected, have shown the antwren to be locally common, as has recent work on river islands near the type locality. These are two cases where additional survey work could lead to a reassessment and upgrading of the conservation status of species that were unknown in life prior to 1990.

The Black-tailed Antbird, like the previous two species, is currently listed as Near-threatened. Once more is learnt of its specific micro-habitat requirements, however, it, too, may prove to be more common and less range-restricted than thought. To date, it is known from relatively few locations in a small portion of north-east Peru and extreme western Brazil, but the flooded-forest habitats that it occupies are extensive, relatively

intact, and under little short-term threat of large-scale development. Conversely, surveys have delimited the range of the Rio Branco Antbird and have led to an understanding of its habitat requirements. This species, however, is found only along a small section of the Rio Branco and some of its tributaries in Roraima, northernmost Brazil, and in extreme southern Guyana. It inhabits dense thickets in gallery-forest understorey, within 0.5 km of the rivers, and a somewhat wider range of habitats on select river islands. Thus, its distribution is narrow and linear, and the estimated extent of suitable habitat is 250 km<sup>2</sup> or less. Its range does not include any formally protected areas, and its habitat has been degraded by widespread burning both on the riverbank mainland and on the river islands. For these reasons, the Rio Branco Antbird is considered Vulnerable, despite the fact that it is locally common.



The **Restinga Antwren** takes its name from the sandy seaside copses in which it lives. Its ecology is specialized, its range tiny, and thus its overall population must be very small. Unfortunately, restinga woodland in the state of Rio de Janeiro is under pressure from industrial activity and clearance for beach-front housing. The establishment of a new and functional restinga reserve would be an important step towards ensuring the survival of this attractive antbird.

[*Formicivora littoralis*, Cabo Frio, Rio de Janeiro, Brazil.  
Photo: Luiz Pedreira Gonzaga]





Of the two known races of the **Scalloped Antbird**, the nominate is the less common. It ranges from Espírito Santo north to southern Bahia, where it is now restricted to its few last strongholds. The northern race *soror* lives at higher densities, where it occurs, but unfortunately the area of forest involved is tiny. Although this is only one of many species that would benefit from the protection of the last forest fragments in Alagoas state, efforts to secure this protection have so far failed.

[*Myrmeciza ruficauda*  
*ruficauda*,  
Linhares Natural Reserve,  
Espírito Santo, Brazil.  
Photo: Edson Endrigo]

With regard to the status of various thamnophilids, one of the great remaining mysteries was resolved with the recent rediscovery of the White-masked Antbird. The species was previously known from a single specimen collected in 1937, somewhere in the lower Río Pastaza region of eastern Ecuador and northern Peru. It remained unrecorded for more than 60 years, despite concerted efforts to find it along the upper reaches of the river in both countries. Even the type locality, "Andoas", has never been located with certainty. Subsequent authors have suggested that the type specimen was, in fact, a hybrid between the White-plumed Antbird and some other antbird species, rather than a distinct species. Then, in July 2001, a team from Louisiana State University's Museum of Natural Science, in the United States, working some 45 km from the Río Pastaza, in north-western Loreto, not only rediscovered the White-masked Antbird, but found it to be locally fairly common in that part of Peru. The bird was found in an isolated patch of sandy-soil *varillal* woodland, but was absent from surrounding forest growing on richer soils. Like several other long-lost or recently discovered antbirds, the White-masked Antbird is now believed to be largely restricted to sandy-soil habitats. More surveys are needed in order to establish the extent of suitable *varillal* habitat in the region, to confirm the geographical boundaries of the antbird's range, and to determine whether White-masked Antbirds are uniformly distributed through the appropriate habitat. Until then, the true conservation status of this species, officially listed as Data-deficient, remains in doubt. It does, however, provide yet another dramatic example of how white-sand habitats in Amazonia have been under-investigated, and of how underlying soil mosaics can influence bird distribution.

All but one of the remaining threatened or near-threatened antbirds occupy small ranges in the foothills of the Andean countries. These range-restricted Andean endemics are at particular risk, in part because they, like most Andean species, have relatively narrow elevational range limits. The Bicoloured Antvireo occurs between 900 m and 2200 m in a small corner of Colombia and Ecuador, the Yungas Antwren from 600 m to 1400 m in the east Andean foothills of Bolivia, the Ash-throated Antwren at 1350-1450 m at just two localities in north-central Peru, and the Yellow-rumped Antwren from 1100 m to 1700 m in northern Bolivia and southern Peru. The first two of those are listed as Vulnerable and the last two as Endangered. Restriction to narrow elevational zones means that the ranges of these birds are not only tiny but also linear, and the clearing of even a few hun-

dred metres of forest can have the effect of fragmenting their ranges. This is an especially important consideration given that the very elevations occupied by these species are also prime areas for agricultural exploitation, particularly for growing coca, coffee, tea and naranjilla, as well as for logging and human settlement. The Grey-headed Antbird, a Vulnerable endemic of the Tumbes region of south-west Ecuador and north-west Peru, is found at 600-2900 m, thus across broader elevational limits than the aforementioned species, but its range has become highly fragmented by habitat destruction. From 1958 to 1988, the rate of deforestation below 900 m in western Ecuador was calculated to be 57% per decade, with the result that the Grey-headed Antbird is now confined to a few isolated areas, mostly at the upper end



The **Slender Antbird**, sole occupant of its genus, is **Endangered**. It is restricted to *mata-de-cipó*, a vegetation characterized by tangled growths of lianas and patches of terrestrial *Aechmea bromeliads*. This habitat forms a narrow interface between the coastal humid forests of east Brazil, and the interior caatinga woodlands. Slender Antbirds are extreme specialists on *Aechmea bromeliads*, in whose shelter they forage, sing and presumably place their nests. The global population of this interesting bird currently stands at 1000-2500 individuals, and is falling.

[*Rhopornis ardesiacus*,  
Boa Nova, Brazil.  
Photo: Luiz Claudio Marigo]



Although the **Black-hooded Antwren** appears capable of surviving in a variety of humid second-growth habitats, its total range is estimated at only 130 km<sup>2</sup>, and its total global population is thought to number 1000-2500 individuals. Woodlands on the narrow coastal plain to which it is confined continue to be cleared for tourist facilities, beachside housing, pastures and plantations of *Euterpe* palms. It is essential that this type of destruction is curtailed and that appropriate protected areas are established. The species is listed as Critical.



[*Formicivora erythronotos*, Rio de Janeiro, Brazil. Photo: Luiz Claudio Marigo]

of its altitudinal range. Significant population reservoirs still exist in the largely intact forests of the Tumbes Reserved Zone, in Peru, but recent cessation of border hostilities between Peru and Ecuador has had the collateral effect of reducing the Peruvian military presence that previously prevented squatting, wood-cutting, hunting and other extractive activities by people illegally entering the Reserved Zone.

A thamnophilid of particular concern is the Recurve-billed Bushbird, which has been observed at only a few foothill sites in northern Colombia, and in the Sierra de Perijá of extreme north-western Venezuela. The species has not been recorded since 1965, this due no doubt in part to both the secretive nature of bushbirds in general and the fact that few surveys have been attempted because of political instability and guerilla activities in the regions involved. Nonetheless, deforestation for cattle-ranching, logging, gold-mining and agriculture, the last involving particularly coca and associated narcotics production, has been extreme in this region, and the global population of this Endangered bushbird must be very small.

Of the 39 species of antbird that occur in Central America, all but two, the Black-hooded Antshrike and the Streak-crowned Antvireo (*Dysithamnus striaticeps*), have ranges that extend into South America. Many of these species are distributed at least from Costa Rica to the Pacific slope of Ecuador, and some extend much farther. Accordingly, only one thamnophilid from Central America is considered threatened, that being the Speckled Antshrike of Panama and extreme north-western Colombia. This Vulnerable antshrike has a peculiarly fragmented distribution, with known localities separated by intervening areas of intact, seemingly suitable habitat that are apparently unoccupied. It may be another low-density species that was never particularly common, but the combination of a restricted range and ongoing habitat destruction within that range gives cause for alarm. The Black-hooded Antshrike and the Streak-crowned Antvireo occupy comparatively tiny ranges, but they are relatively common in some large Costa Rican parks and reserves that appear to be effectively protected.

A situation that has received very little attention is the almost total devastation of lower Amazonian forest east of the Rio Tocantins in eastern Brazil. The lowland forests of Maranhão and north-east Pará make up what has been termed the Belém or Maranhão Centre of Endemism, and constitute the easternmost extension of the southern Amazonian humid forest. In just a few decades, these forests have been reduced to a pitiful remnant of

their former state. Clear-cutting for commercial logging has been the primary culprit, accompanied by ever-expanding human settlement. The remaining primary forest is small and highly fragmented. In spite of this, the plight of this region has gone nearly unnoticed, chiefly because there are few species endemic in the region. This "species-only" approach to conservation belies the fact that there are numerous distinctive taxa that are endemic, or nearly endemic, in this biogeographical region. Among the antbirds here, taxa which must be considered threatened are the subspecies *incertus* of the White-shouldered Antshrike, the nominate race of the White-backed Fire-eye, and the subspecies *paraensis* of the Black-spotted Bare-eye. Although these taxa, and many others endemic in the region, are currently classified as subspecies of wider-ranging polytypic species, some will no doubt be elevated to full species status once taxonomic analyses incorporating molecular and vocal data are carried out (see Systematics). This serves to illustrate the danger of taxonomies that underestimate species-level biodiversity, the result being that many unique life forms are overlooked when conservation priorities are being set.

#### General Bibliography

- Ames (1971), Bard *et al.* (2002), Bates (2000, 2002), Bates *et al.* (1999), Botero (2002), Foster (1975), Goerck (1999b), Gonzaga (2001), Gradwohl & Greenberg (1980, 1984), Greenberg & Gradwohl (1983, 1985), Hackett (1993), Hackett & Rosenberg (1990), Heimerdinger & Ames (1967), Hellmayr (1929a), Isler *et al.* (1997, 1998, 1999), Johns (1991), Kratter (1997a), Kroodsmas (1989), Marcotullio & Gill (1985), Mason (1996), Morton (1996), Morton & Stutchbury (2000), Müller (1847), Munn (1984), Munn & Terborgh (1979), Oniki (1971a, 1975, 1979a, 1979b), Parker (1982), Parker & Goerck (1997), Peters (1951), Remsen & Parker (1983, 1984), Ridgway (1911), Rosenberg, G.H. (1990), Rosenberg, K.V. (1993, 1997), Schneirla (1956), Schulenberg (1983), Sclater (1890), Sibley (1996), Sibley & Ahlquist (1985, 1990), Sibley & Monroe (1990, 1993), Sieving (1992), Skutch (1969c, 1976, 1996a), Snow & Snow (1964), Stotz (1990b), Stotz *et al.* (1996), Stouffer & Bierregaard (1995), Stouffer & Borges (2001), Thiollay (1992), Todd (1927), Tostain (1986a), Tostain & Dujardin (1988), Whitney & Álvarez (1998), Whitney & Pacheco (1997), Whitney & Rosenberg (1993), Wiley (1971, 1980), Wilkinson & Smith (1997), Willis (1967, 1968a, 1968b, 1969, 1972a, 1972b, 1973b, 1979a, 1981, 1982a, 1982b, 1984a, 1984b, 1984c, 1984d, 1984e, 1985a, 1985b, 1985c, 1989), Willis & Oniki (1972, 1978), Young (1971), Zimmer (1999, 2003a), Zyskowski & Prum (1999).





PLATE 39

inches 3  
cm 8



## Genus *CYMBILAIMUS* G. R. Gray, 1840

### 1. Fasciated Antshrike

#### *Cymbilaimus lineatus*

**French:** Batara fascié **German:** Zebraameisenwürger **Spanish:** Batará Lineado

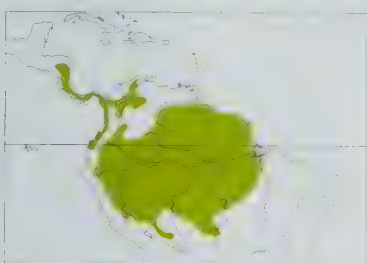
**Taxonomy.** *Lanius lineatus* Leach, 1814, Berbice = New Amsterdam, Guyana. Genus presumed related to *Thamnophilus* on basis of external morphology, especially the strongly hooked bill, but supporting molecular or other evidence unavailable. Previously treated as conspecific with *C. sanctaemariae*, but latter sympatric almost throughout its range. Race *intermedius* appears to be inseparable on plumage from *fasciatus*; in addition, described race *brangeri* appears indistinguishable from and falls within geographical range of latter, and is thus considered untenable. Three subspecies recognized.

#### **Subspecies and Distribution.**

*C. l. fasciatus* Ridgway, 1884 - extreme SE Honduras (El Paraíso), Caribbean slope in Nicaragua and Costa Rica, both slopes in Panama (on Pacific slope locally from Chiriquí to Coelé and in E), W & N Colombia (S in Magdalena Valley to Caldas), NW Venezuela (both Andean slopes E to Mérida and Barinas) and NW Ecuador (Esmeraldas, N Los Ríos).

*C. l. intermedius* Hartert & Goodson, 1917 - S Venezuela (W Bolívar, Amazonas), S Colombia (S from Meta and Guainía), E Ecuador, E Peru, NW & S Amazonian Brazil (E to R Branco and R Negro and, S of R Amazon, E to R Tocantins and S to Acre, Rondônia and Mato Grosso) and NW & extreme E Bolivia (Pando, La Paz, E Santa Cruz).

*C. l. lineatus* (Leach, 1814) - E Venezuela (E Bolívar) E to French Guiana and S to NE Amazonian Brazil (N of R Amazon and E of R Branco and R Negro in Amazonas, Pará and Amapá).



**Descriptive notes.** 17-18 cm; 35-40 g. Heavy bill. Male nominate race has forehead and crown black with a few extremely narrow white bars; remaining plumage narrowly barred black and white; iris red. Distinguished from similar *C. sanctaemariae* by only minimally crested appearance, bars on forehead, more white on tail, red eyes. Female has rufous crown, rest of plumage narrowly barred dark brown and pale yellowish-brown, tail barred pale buff. Subadult male has broader white bars across crown and wider white barring. Race *fasciatus* has strongly barred forehead contrasting with solid black crown, female with cinnamon

tailbars; *intermedius* has same crown pattern as previous, but differs in having light bars on tail relatively wider (but individual and age variation in both races creates overlap in this character). **VOICE.** Loudsong an evenly paced series of 3-10 plaintive, lazily delivered whistles, notes longer than spaces, middle notes sometimes longer and at slightly higher pitch. Calls include rattle-like chatter and plaintive downsliding whistle, often intermixed in series.

**Habitat.** Vine tangles and dense mid-storey canopy of lowland evergreen forest, both at edge and in interior. More often found in second growth and thickets, outside dense forest, in Central America than in Amazonia. Usually below 800 m, rarely to 1600 m; at slightly lower elevations than *C. sanctaemariae* where ranges overlap in Andean foothills.

**Food and Feeding.** Variety of mostly large insects, including Orthoptera (grasshoppers, crickets, katydids), beetles (Curculionidae), hemipteran bugs (Pentatomidae), homopterans, lepidopteran larvae, and others; also spiders; also small lizards, such as anoles, and small frogs; rarely, small fruits. Individuals or pair-members move sluggishly through vegetation by short, heavy hops, pausing sometimes for long periods to scan foliage; prey gleaned by lunging stabs or reaches, or by quick, short sallies. Forages mostly at 5-25 m above ground, particularly in vine tangles and clusters of philodendrons (*Philodendron*) close to trunks, sometimes descending lower at forest edge. Joins mixed-species flocks of insectivores, particularly antwrens and foliage-gleaners (Furnariidae), as these pass through its territory. Similarly, attends army-ant swarms passing through, on such occasions descending to near ground level.

**Breeding.** Apr-Jun in Costa Rica and Jul-Nov in Amazonian Brazil; fledgling being fed in Oct in Surinam and in Sept in French Guiana. Additional nest and egg descriptions from Panama and Colombia. Nest a thin-walled cup of loosely woven dark fibres, attached by rim in horizontal fork, among foliage, 2-10 m above ground. Normal clutch 2 eggs, creamy white, spotted with olivaceous-brown, chocolate-brown, vinaceous-drab and/or pale lilac; incubation by both parents during the day, by female at night, period not known.

**Movements.** Presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Common to uncommon throughout its extensive range, which includes numerous formally protected areas, as well as vast areas of unprotected but still intact suitable habitat, particularly in Amazon Basin and Guianan regions.

**Bibliography.** Angehr & Christian (2000), Blake, J.G. & Loiseleur (2001), Cody (2000), Cohn-Haft *et al.* (1997), Eisenmann (1952), Gyldestolpe (1945a), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Munn & Terborgh (1979), Oniki (1979c), Oniki & Willis (1972, 1982), Parker (2003a), Pierpont & Fitzpatrick (1983), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Salaman, Donegan & Cuervo (2002), Schubart *et al.* (1965), Sick (1993, 1997), Skutch (1972, 1976), Slud (1964), Stiles & Skutch (1989), Stotz *et al.* (1996), Stouffer & Bierregaard (1995), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Thiollay (1988a), Thiollay & Julien (1998), Tostain *et al.* (1992), Wetmore (1972), Willis (1984d), Zimmer, J.T. (1932f), Zimmer, K.J. (2003a).

### 2. Bamboo Antshrike

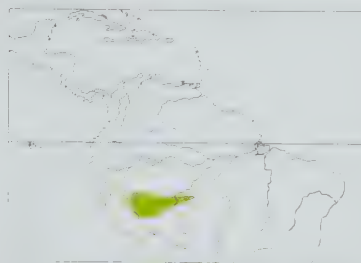
#### *Cymbilaimus sanctaemariae*

**French:** Batara des bambous **Spanish:** Batará de Madre de Dios  
**German:** Bambusameisenwürger

**Taxonomy.** *Cymbilaimus lineatus sanctaemariae* Gyldestolpe, 1941, Victoria, Pando, Bolivia.

Genus presumed related to *Thamnophilus* on basis of external morphology, especially the strongly hooked bill, but supporting molecular or other evidence unavailable. Previously treated as conspecific with *C. lineatus*, but occurs sympatrically with that species. Monotypic.

**Distribution.** Locally in SE Peru (Cuzco and Madre de Dios), SW Amazonian Brazil (Acre and Rondônia) and NW Bolivia (Pando and N La Paz).



**Descriptive notes.** 16-17 cm; 28-33 g. Large bill. Male has black forehead and crown, remaining plumage narrowly barred black and white; iris dark brown. Distinguished from similar *C. lineatus* by more crested appearance, no bars on forehead, white on tail confined to rounded spots on sides, different eye colour. Female differs from male in rufous crown, crest tipped black, throat pale buffy white and unbarred, underparts cinnamon-buff with barring limited to sides. **VOICE.** Loudsong a countable series of 4-20 (typically 10-12) short, dry, strident notes, even in frequency, pace and intensity except for initial soft notes. Calls include

soft, downward-inflected whistle, and short rattle that is often introduced by emphatic downward-inflected note.

**Habitat.** A near-obligate bamboo specialist. Occupies upper strata of thickets of *Guadua* bamboo inside humid lowland and foothill forests, to 1200 m. More common in extensive stands of bamboo on sunny slopes with broken canopy of overtopping trees. Also sometimes inhabits dense vine tangles from mid-storey into subcanopy of floodplain-forest, including some that lack bamboo.

**Food and Feeding.** Stomachs of four birds from Peru revealed remains of several beetles (Coleoptera), a 15-mm short-horned grasshopper (Acrididae), a small cockroach (Blattidae), a 30-mm lepidopteran larva, and a 6-mm ant. Forages in pairs, occasionally in loose association with mixed-species flocks of insectivores as they pass through its territory. Forages primarily in crowns of bamboo, in dense masses of fine leaves and branches, c. 8 m above ground, but also in dense foliage and vine tangles in trees surrounding or to c. 20 m above the bamboo; hops along branches deliberately, peering at substrate. Primarily perch-gleans or sallies short distances, less often employing other acrobatic moves, to obtain arthropods from bamboo stems, foliage and vine tangles; occasionally probes clusters of dead leaves.

**Breeding.** Nothing known.

**Movements.** Presumed resident throughout its range.

**Status and Conservation.** Not globally threatened. Fairly common in appropriate habitat within its somewhat limited range. Patchy distribution is seemingly based on localized nature of extensive stands of *Guadua* bamboo, which may be spreading with increasing human disturbance in SW Amazonia. Represented in Brazil by apparently disjunct populations in Acre and Rondônia (E of R Madeira), but has not been recorded from extensive *Guadua* stands in the Alta Floresta region of Mato Grosso. Brazilian populations, particularly those in Rondônia, could be at risk as a result of complete deforestation in some areas.

**Bibliography.** Foster *et al.* (1994), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Kratter (1997a), Parker (2003a), Parker *et al.* (1997), Pierpont & Fitzpatrick (1983), Remsen (2003b), Remsen & Parker (1984), Ridgely & Tudor (1994), Rosenberg (2003), Servat (1996), Sick (1993), Stotz *et al.* (1996), Whittaker & Oren (1999), Zimmer (2003a).

## Genus *HYPOEDALEUS* Cabanis & Heine, 1859

### 3. Spot-backed Antshrike

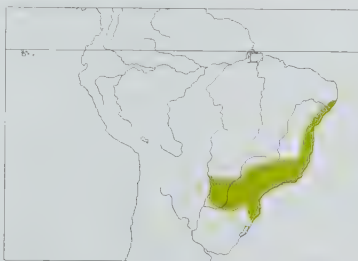
#### *Hypodaleus guttatus*

**French:** Batara moucheté **German:** Perlenmantel-Ameisenwürger **Spanish:** Batará Goteado

**Taxonomy.** *Thamnophilus guttatus* Vieillot, 1816, Rio de Janeiro, Brazil.

Genus presumed related to *Thamnophilus* on basis of external morphology, especially the strongly hooked bill, but supporting molecular or other evidence unavailable. Relationships uncertain; historically placed after *Cymbilaimus* because of similarity of bill morphology, and ecology also somewhat similar. Paler N birds (Alagoas S to Espírito Santo) described as race *leucogaster*, but apparently broad zone of intergradation with S populations exists, with both extremes as well as intermediates occurring in São Paulo; racial division considered unwarranted. Monotypic.

**Distribution.** E & SE Brazil (E Alagoas and E Bahia S to extreme E Mato Grosso do Sul, Santa Catarina and N Rio Grande do Sul), E Paraguay (E of R Paraguay; one record on W bank, in SE Alto Paraguay) and extreme NE Argentina (Misiones).



**Descriptive notes.** 20-21 cm. Heavy bill. Male has black upperparts spotted and barred white, brownish-black tail barred white; white below, sides pale grey, lower underparts brownish-yellow, but in N ("leucogaster") underparts almost completely lack brownish-yellow. Female resembles male, but upperpart spots pale buff, brownish-yellow below more extensive (but in N restricted to posterior portions of underparts). **VOICE.** Loudsong a long (e.g. 4 seconds) vibrant trill, building in intensity and frequency before dropping off at end. Calls include long, downward-inflected whistle, shorter, slightly descending churr, and abrupt "chip".

**Habitat.** Vine tangles in canopy and subcanopy of lowland evergreen forest, to 900 m. Confined to wetter sections of forest with dense vegetation.

**Food and Feeding.** Variety of insects, including orthopterans, hemipteran bugs, beetles (Coleoptera) and, particularly, larger larvae of Lepidoptera; also other arthropods such as spiders; also snails;



possibly some small vertebrates such as tree-frogs and lizards. Usually in pairs, sometimes loosely associated with mixed-species flocks, but typically alone. Forages mostly 8-15 m above ground, through dense tangles of vines and epiphytes, progressing sluggishly by heavy hops, pausing sometimes for long periods, scanning nearby leaves and branches, particularly leaves of bromeliads and epiphytic ferns. Prey often gleaned by quick, snatching motions; larger items beaten repeatedly against branches before being consumed. One published record of an individual in Brazil (Boracéia, in São Paulo) following army ants (*Labidus praedator*) for 55 minutes as these moved through a dense treefall zone; it hopped on low logs and in shrubs, peering about; ignored ground prey, but captured eight small prey by gleaning from limbs (four times), and logs (twice), or by short sallies to a trunk 1-3 m up and to a leaf 1 m up.

**Breeding.** Nest undescribed. Eggs white, with irregular lilaceous dots and fine lines, larger blackish spots.

**Movements.** Presumed resident throughout its range.

**Status and Conservation.** Not globally threatened. Its range includes several reserves, e.g. Iguaçu National Park, in Argentina, Augusto Ruschi Biological Reserve, Boracéia Forest Reserve and Serra da Bocaina National Park, in Brazil, and Cerro Corá National Park and Mbaracayú Forest Nature Reserve, in Paraguay. Generally rare, however, outside reserves and appears to be sensitive to disturbance. The Serra do Mar may be a Brazilian stronghold. Smaller, isolated populations in the Serra da Ouricana are at risk owing to ongoing deforestation. Although not currently considered threatened, its relatively small range and the highly fragmented nature of remaining Atlantic Forest are causes for concern for this species, which seems to require large territories.

**Bibliography.** Aleixo (1999), dos Anjos (2001a), Christiansen & Pitter (1989), Cory & Hellmayr (1924), Fraga & Narosky (1985), Gonzaga *et al.* (1995), Ihering (1900), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Nehrkorn (1899), Oates & Reid (1903), Pacheco & Whitney (1995), Parker (2003a), de la Peña (1988), Pinto (1932), Ridgely & Tudor (1994), do Rosário (1996), Schönwetter & Meise (1967), Sick (1993), Stotz *et al.* (1996), Whitney (2003a), Willis (1984d), Zimmer (2003a).

Genus *BATARA* Lesson, 1830

4. Giant Antshrike

*Batara cinerea*

**French:** Batara géant

**German:** Riesenameisenwürger

**Spanish:** Batará Gigante

**Taxonomy.** *Thamnophilus* [sic] *cinereus* Vieillot, 1819, Rio de Janeiro, Brazil.

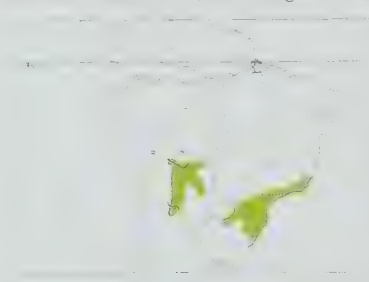
Genus presumed related to *Thamnophilus* on basis of external morphology, especially the strongly hooked bill, but supporting molecular or other evidence unavailable. Relationships uncertain; possibly closest to the *Thamnophilus doliatus* complex. Populations in Bolivia, W Paraguay and NW Argentina require study; recent specimens from presumed range of race *argentina* (in E Bolivia lowlands) approach *excubitor* in paleness, and plumage differences between the two may be clinal; also, diagnosable differences may possibly be found between lowland and foothill populations. Three subspecies recognized.

**Subspecies and Distribution.**

*B. c. excubitor* Bond & Meyer de Schauensee, 1940 - C Bolivia (W Santa Cruz).

*B. c. argentina* Shipton, 1918 - E Bolivia (S Santa Cruz, Chuquisaca, Tarija), W Paraguay (Boquerón, Presidente Hayes) and NW Argentina (Jujuy, Salta, N Tucumán).

*B. c. cinerea* (Vieillot, 1819) - SE Brazil (S Espírito Santo and SW São Paulo S to Santa Catarina and N Rio Grande do Sul) and NE Argentina (Misiones).



**Descriptive notes.** 30-34 cm, 148-155 g (*cinerea*); 27-28 cm, 100-110 g (*argentina*). Bill long and heavily hooked, tail very long and broad. Male has forehead, crown and crest black, mantle, wings and tail barred black and white; rest of plumage neutral grey. Female is olive, becoming yellowish on posterior underparts; crest rufous, variably tipped black; mantle, wings and tail barred cinnamon-buff and dark brown. Race *argentina* is smaller than nominate, with fewer bars on wings and tail, female slightly paler above, warmer-coloured below, with less black on crest; *excubitor* is paler than previous, with more restricted dark

markings. **Voice.** Loudsong a short roll (like a police whistle), followed by loud, strident notes of constant frequency, intensity and pace, and ending with soft "chip", total length c. 3 seconds. Calls include long, raspy, downward-inflected snarl, often repeated rapidly, and a short even series of abrupt loud notes.

**Habitat.** Understorey and mid-storey of evergreen forest, from lowlands to 2600 m in the Andes. At lower elevations in Bolivia, Paraguay and Argentina, occupies dense thickets of often thorny bushes surrounded by terrestrial bromeliads in subhumid, often xerophytic, stunted Chaco woodland; in the Andes found in montane forest, especially where dense growth occurs along margins of ravines and streams. In Atlantic Forest region ranges from near sea-level to wet elfin ridgetop forest, almost always with extensive stands of bamboo.

**Food and Feeding.** Large insects, including beetles (Coleoptera), and other arthropods; also snails and slugs; also small vertebrates, including frogs, lizards and small snakes. Reported also to take small mice, nestling birds, and eggs. A male in Brazil (Rio Grande do Sul) was seen to pounce on a large tree-frog (*Hyla*) with body length c. 8 cm, which it skewered with the bill and then bashed several times on the ground, before swallowing. Individuals or pairs forage in dense vegetation 0-15 m above ground (mostly below 5 m), progressing by heavy hops and short, sailing flights, pausing to scan vegetation and the ground for prey; often "squirrels" along horizontal branches or up thick vines. Reaches out, up or down to glean prey from leaf, stem and branch surfaces with a quick stabbing motion of the bill; other items, particularly frogs, lizards and large orthopterans, are frequently flushed from vegetation and pursued to the ground. Does not associate with mixed-species flocks.

**Breeding.** Nests in N Argentina in Oet (Tucumán), Nov (Jujuy) and Dec (Salta), and in Brazil (São Paulo) in Nov. Nest very large, external diameter 18-20 cm, depth 8 cm, an untidily constructed cup of stalks, grasses, *Tillandsia*, leaves and fibres, likened to nest of thrush (*Turdus*), placed 1-5-3 m above ground in a fork or corner between branches in dense vegetation. Normal clutch 2 or 3 eggs, whitish, with crown of darkish marks and other smaller, almost reddish marks around blunt end.

**Movements.** Presumed resident throughout range; in some regions, possibly some local movement following large die-offs of bamboo.

**Status and Conservation.** Not globally threatened. Seemingly healthy populations in several large parks and reserves in Brazil, among them Itatiaia, Serra dos Órgãos, Aparados da Serra and Iguaçu National Parks, as well as in higher elevations of the Serra do Mar; also in NW Argentina, such as Calilegua National Park. Requires relatively large territories; does not survive in small residual forest patches in the Atlantic Forest, and in this region ephemeral nature of bamboo may mean that protected areas have to be suitably large and contiguous with other areas of appropriate habitat to allow local movements in response to periodic bamboo die-offs.

**Bibliography.** Aleixo (1999), dos Anjos & Boçon (1999), Belton (1985), Cory & Hellmayr (1924), Fraga & Narosky (1985), Hayes (1995), Ihering (1914), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Kratter *et al.* (1993), Nacinovic & Schloemp (1992), Parker (2003a), de la Peña (1988, 2001b), Pereyra (1951), Remsen *et al.* (1986), Ridgely & Tudor (1994), do Rosário (1996), Schönwetter & Meise (1967), Sick (1993, 1997), Stotz *et al.* (1996), Willis (1979b), Zimmer (2003a).

Genus *MACKENZIAENA* Chubb, 1918

5. Large-tailed Antshrike

*Mackenziaena leachii*

**French:** Batara de Leach

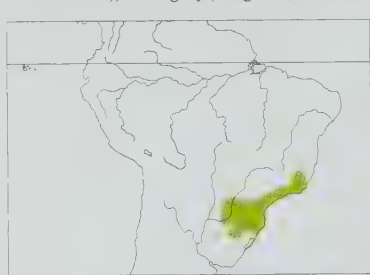
**German:** Langschwanz-Ameisenwürger

**Spanish:** Batará Pintado

**Taxonomy.** *Thamnophilus leachii* Such, 1825, Rio de Janeiro, Brazil.

Genus presumed related to *Thamnophilus* on basis of external morphology, especially the strongly hooked bill, but supporting molecular or other evidence unavailable. Relationships uncertain; may not be very closely allied with *M. severa*. Monotypic.

**Distribution.** SE Brazil (EC Minas Gerais, S Espírito Santo and SW São Paulo S to N & C Rio Grande do Sul), E Paraguay (Caaguazú, Alto Paraná, Caazapá, Itapúa) and NE Argentina (Misiones).



**Descriptive notes.** 25-26 cm; 58-62 g. Tail long and full. Male is black, with small white spots on crown, nape, upperparts and sides. Female is mostly brownish-black, forehead rufous, crown rufous with black feather edgings; upperparts spotted pale buff, wings barred pale buff; underparts heavily spotted buffy white, crissum barred buffy white. Subadult resembles female, but pale spots larger throughout, becoming bars on belly, and tail faintly barred. **Voice.** Loudsong a long (e.g. 4 seconds), ascending and then descending series of 15-21 evenly spaced, clear, loud, limp whistles, beginning softly, increasing

immediately in intensity, and falling off at end. Calls include a raspy snarl, a short hiss, and long and short downslurred whistles.

**Habitat.** Dense thickets of often bamboo-rich forest, from lowlands to 2150 m. Primarily at higher elevations in N of range, where most common in foothill and montane forest, and associated mainly with extensive stands of bamboo, particularly where dense undergrowth present at forest edges. In S of range, where it occurs down to near sea-level, favours degraded forest (including bamboo-dominated secondary scrub), scrubby dry forest, stunted semi-humid *serra* woodland, and thickets at forest edge.

**Food and Feeding.** Variety of large insects, particularly orthopterans and large lepidopteran larvae, and other arthropods; also snails and slugs; reported to take small vertebrates such as frogs, lizards, snakes, and nestling birds, as well as eggs. Forages singly and in pairs, mostly at 0-5 m above ground, progressing through dense thickets of bamboo and shrubbery with short hops separated by pauses to scan foliage for prey; hops through debris on the ground, perches on vertical bamboo stems. Items gleaned by reaching out, up or down to foliage and branch and stem surfaces; terrestrial prey or flushed arboreal prey pounced on from above. Larger items beaten repeatedly against branches before being consumed.

**Breeding.** Nothing known.

**Movements.** Presumed resident throughout its range.

**Status and Conservation.** Not globally threatened. Populations are found in several parks and reserves, including Itatiaia, Aparados da Serra, Serra dos Órgãos, Caraca and Iguaçu National Parks and Caratinga Biological Station, all in Brazil, Iguaçu National Park, in Argentina, and Caaguazú and San Rafael National Parks, in Paraguay. Relatively small range of this species and the fragmented nature of remaining Atlantic Forest are, however, causes for concern, as it appears that this antshrike does not survive in small residual forest patches in this region.

**Bibliography.** dos Anjos (2001a), dos Anjos & Boçon (1999), Belton (1982, 1985), Cory & Hellmayr (1924), Fraga & Narosky (1985), Hayes (1995), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Lowen *et al.* (1997), Pacheco & Whitney (1997), Parker (2003a), Ridgely & Tudor (1994), do Rosário (1996), Sick (1993, 1997), Stotz *et al.* (1996), Willis (1984d), Zimmer (2003a).

6. Tufted Antshrike

*Mackenziaena severa*

**French:** Batara othello

**German:** Schwarzmasken-Ameisenwürger

**Spanish:** Batará Copetón

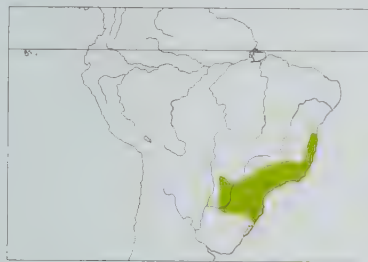
**Taxonomy.** *Lanius severus* M. H. K. Lichtenstein, 1823, São Paulo, Brazil.

Genus presumed related to *Thamnophilus* on basis of external morphology, especially the strongly hooked bill, but supporting molecular or other evidence unavailable. May be more closely allied with species in genus *Frederickena* than with *M. leachii*. Monotypic.

**Distribution.** SE Brazil (SE Bahia, EC Minas Gerais and W São Paulo S to N Rio Grande do Sul), E Paraguay (Amambay, Canindeyú, Alto Paraná, Caazapá, Itapúa) and NE Argentina (Misiones).

**Descriptive notes.** 21-22 cm; 52 g, 80 g. Long crest typically held compressed. Male is sooty grey; forehead and crest blackish, wings brownish-black. Female is blackish-brown; forehead and crest rufous, upperparts barred cinnamon, underparts barred pale buff, tail faintly barred. Subadult male resembles adult, but more brownish, including crest. **Voice.** Loudsong a series of 3-12 (typically 6)





**Food and Feeding.** Variety of large insects and other arthropods; also reported to take snails, slugs, and small vertebrates such as frogs, lizards, snakes and nestling birds, as well as eggs. Forages individually or in pairs in dense vegetation, particularly in bamboo thickets and vine clusters

loud countable whistles that rise in pitch while becoming shorter, occasionally ending on lower-pitched note. Calls include emphatic, loud, raspy snarl, usually downslurred, and a clear, downward-inflected whistle c. 1 second long.

**Habitat.** Understorey and mid-storey of lowland and foothill evergreen forest and second growth, primarily in dense vine tangles, thickets and stands of bamboo, from sea-level to 1400 m. Also occupies even highly degraded forest patches, overgrown orchards, eucalyptus (*Eucalyptus*) stands, and banana plantations, particularly where these are regenerating with dense stands of bamboo.

surrounding larger trees, at 0-3 m, occasionally to 10 m above ground; progresses sluggishly by short leaps among mostly vertical or angled perches, with intervening pauses to scan for prey. Food items gleaned directly from leaf, stem and branch surfaces, less frequently from the ground, by a quick stabbing motion of the bill; occasionally flutters short distances to attack prey that are out of reach.

**Breeding.** Nest undescribed. Eggs described as having clear ground colour, with dull, mottled dark lilaceous spots and some grey lines at pointed end.

**Movements.** Presumed resident throughout its range.

**Status and Conservation.** Not globally threatened. Several large parks and reserves exist in the relatively small range of this Atlantic Forest bird, e.g. Itatiaia and Serra dos Órgãos National Parks, in Brazil, and Iguazú National Park, in Argentina. It also persists in a number of degraded, secondary habitats down to sea-level. Probably less threatened by environmental disturbance than is any of the other large antshrikes endemic in this region.

**Bibliography.** dos Anjos (2001a), Belton (1985), Cory & Hellmayr (1924), Fraga & Narosky (1985), Haffer (1987), Hayes (1995), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Krügel & dos Anjos (2000), Machado & Lamas (1996), Parker (2003a), Ridgely & Tudor (1994), do Rosário (1996), Schönwetter & Meise (1967), Sick (1993, 1997), Stotz *et al.* (1996), Willis (1979b, 1984d), Zimmer (2003a).



inches 4  
cm 10





# Genus *FREDERICKENA* Chubb, 1918

## 7. Black-throated Antshrike

### *Frederickena viridis*

**French:** Batara à gorge noire

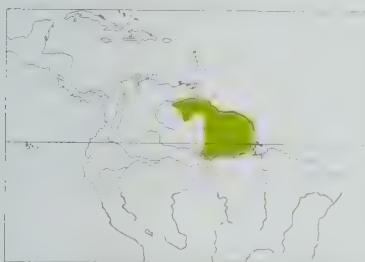
**Spanish:** Batará Gorginegro

**German:** Schwarze Ameisenwürger

**Taxonomy.** *Thamnophilus viridis* Vieillot, 1816, Cayenne, French Guiana.

Genus presumed related to *Thamnophilus* on basis of external morphology, especially the strongly hooked bill, but supporting molecular or other evidence unavailable. Considered to form a superspecies with *F. unduligera*. Monotypic.

**Distribution.** SE Venezuela (Bolívar), the Guianas and NE Amazonian Brazil (Amapá, Pará, and Amazonas N of R Amazon and E of lower R Negro).



**Descriptive notes.** 19–20 cm; 65–75 g. Heavy bill, crest. Male is mostly slate-grey, with black head, throat and breast, faint white bars on tail. Female has crest, nape, upperparts and wings rufous; forehead, side of head, underparts and tail barred blackish-brown and pale buff to white, flanks tinged rufous. Subadult male is like female below, but upperparts mixed grey and brown. **VOICE.** Loudsong a series of 6–15 (typically 10–11) long, plaintive, downward-inflected whistles so closely spaced that they almost run together, initial notes often softest in intensity. Call a long (e.g. 1 second), nasal, downward-inflected churr.

**Habitat.** Understorey of lowland evergreen forest, to 700 m. Appears to be more common in habitats based on sandy soil. Particularly associated with densely vegetated light-gaps, such as treefalls, within primary forest.

**Food and Feeding.** Not well known. Feeds on a variety of insects and other arthropods, including lamellicorn beetles (Lamellicornia), ants, larvae of Lepidoptera, and spiders. Forages individually or in pairs, on or near the ground in dense vegetation, progressing by heavy hops separated by pauses to scan for prey. Reaches out, up or down to glean prey directly from leaf, stem or vine surfaces with a quick stabbing motion of the bill; occasionally makes jumping, upward-directed sallies to glean items from undersides of overhanging vegetation. One female observed at length in Venezuela foraged mostly on the ground in an area with heavy leaf litter, tossing leaves noisily with its bill and probing deliberately in the litter for several seconds at a time, before hopping to another spot; it frequently hopped up several centimetres above ground on to vertical saplings to scan, then dropped back down; also foraged the length of a rotting log, picking at the moss and bark before hopping back down to forest floor. One published record of ant-following, from Brazil (near Manaus): an individual followed a swarm of army ants (*Eciton burchelli*) in dense understorey for 50 minutes, staying 0.2–1.5 m above ground, waggled its tail from side to side, peered up at overhead fronds and leaves, and also scanned the ground, darting rapidly from one perch to another; once, sallied to ground and supplanted *Gymnopithys rufigula*.

**Breeding.** Little known. Oct–Mar in Surinam. Single nest described, an open basket in fork of twiggy branches in low shrub, within shaded understorey. Clutch 2 eggs, creamy white, with purplish hairlines and a few larger spots of same colour.

**Movements.** Presumed resident throughout its range.

**Status and Conservation.** Not globally threatened. Seemingly an uncommon to rare, low-density species throughout most of its range, which includes large areas of intact suitable habitat. Occurs in Imataca Forest Reserve and El Dorado, in Venezuela.

**Bibliography.** Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Haffer (1987), Haverschmidt & Mees (1994), Hilty (2003a), Isler & Whitney (2002), Mason (1996), Meyer de Schauensee & Phelps (1978), Ridgely & Tudor (1994), Sick (1993), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Stouffer & Bierregaard (1995), Thiollay (1994), Tostain *et al.* (1992), Willis (1977, 1984d), Zimmer (2003a).

## 8. Undulated Antshrike

### *Frederickena unduligera*

**French:** Batara ondé

**German:** Dunkelbrauner Ameisenwürger

**Spanish:** Batará Ondulado

**Taxonomy.** *Thamnophilus unduliger* Pelzeln, 1868, Rio Içanna, north-west Brazil.

Genus presumed related to *Thamnophilus* on basis of external morphology, especially the strongly hooked bill, but supporting molecular or other evidence unavailable. Considered to form a superspecies with *F. viridis*. Races defined on basis of female plumages, but racial assignment of specimens often difficult because of extensive individual (though possibly age-related) variation, even among females from same locality; geographical limits of *fulva* and *diversa* are based on preliminary vocal analysis; re-examination of taxa required, and molecular and vocal analysis likely to prove most useful. Four subspecies recognized.

**Subspecies and Distribution.**

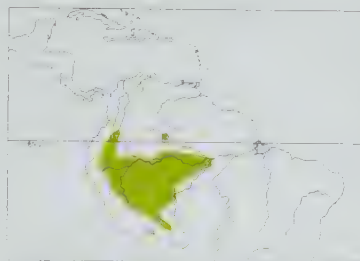
*F. u. unduligera* (Pelzeln, 1868) - NW Amazonian Brazil on upper R Negro, possibly extending S to N bank of R Solimões.

*F. u. fulva* J. T. Zimmer, 1944 - SE Colombia (E Cauca, W Caquetá, W Putumayo), E Ecuador and E Peru (N of R Maranhão and R Amazon), possibly extending E into Brazil (Amazonas N of R Solimões).

*F. u. diversa* J. T. Zimmer, 1944 - E Peru (S of R Maranhão and R Amazon) and NW Bolivia (S La Paz, extreme S Beni).

*F. u. pallida* J. T. Zimmer, 1944 - SW Amazonian Brazil (Amazonas S of R Amazon), probably also NC Bolivia (E Pando).

**Descriptive notes.** 23 cm; 75–85 g. Prominent crest; iris colour varies from brown to pale yellow, possibly related to age or population, or to both. Male is black, with irregular fine whitish barring except on throat. Female is cinnamon with wavy black barring, except forehead and crest barred rufous and black, tail black with narrow grey bars. Subadult male is like female but more heavily barred, except for lightly barred belly centre contrasting sharply with rest of plumage. Race *fulva* is most heavily barred and darkest in coloration; *pallida* is palest, female unbarred on mantle and underparts; *diversa* is intermediate between previous and nominate, iris pale yellow



(always?). **VOICE.** Loudsong varies regionally: race *fulva* gives a long series (e.g. 7–20 notes, 4–5 seconds) of plaintive notes, starting soft and downslurred, then evenly spaced and up-slurred; *diversa* a rapidly delivered, long series of short notes (e.g. 15–19 notes, 2–5 seconds) that gradually increase in pitch and intensity; recordings of loudsongs of other populations too few to generalize. Typical call a long (e.g. 1 second), nasal, downward-inflected churr; other recorded calls include a squeal followed by a sharp note and short scratchy call repeated in short series, but these may be restricted to a single population.

**Habitat.** Dense understorey of lowland evergreen forest, to 1100 m. Almost always associated with dense thickets of vegetation within primary forest, particularly in viny light-gap tangles around treefalls and stream edges; also in dense *Heliconia* thickets and tangles in regenerating *Cecropia* woods in low-lying areas. Seldom away from heavy cover.

**Food and Feeding.** Not well known. Feeds on a variety of insects, including beetles (Coleoptera), katydids and grasshoppers (Orthoptera) and hairy caterpillars. Forages individually or in pairs, on or within 3 m of the ground, usually in tangles of branches and vines of fallen trees and associated light-gap second growth; progresses by heavy hops, with long pauses to scan for prey. A male in Ecuador was observed reaching up to glean prey from undersides of green leaves, and executing upward-directed, looping sallies of up to 1.5 m to undersides of dead leaves and branches, all within the confines of a large fallen tree. Other individuals seen to search for prey by hopping along fallen trunks, clambering through vine tangles, or moving through a dense stand of saplings on vertical perches. Crest may be raised and lowered between hops; frequently swings tail sideways in jerky manner, similar to tail movements of nunlets (*Nonnula*). Although not usually associating with mixed-species flocks, may briefly accompany flocks moving through its territory. One published record of ant-following, from Colombia (Umbria, in Putumayo): a bird followed an *Eciton burchelli* swarm for 1 hour through a streamside vine tangle, staying 1–4 m above ground in vines and persistently wagging its tail from side to side; once supplanted *Pithys albifrons*, but looked down to zone of ants very little.

**Breeding.** No information.

**Movements.** None recorded; presumed resident throughout its range.

**Status and Conservation.** Not globally threatened. Seemingly an uncommon to rare, low-density species throughout most of its range, which includes vast areas of intact suitable habitat. This encompasses some large protected areas, e.g. Yasuni National Park, in Ecuador, and Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru. This antshrike is probably an indicator of high-quality forest; is generally absent from disturbed areas.

**Bibliography.** Álvarez (1994), Alverson *et al.* (2001), Cory & Hellmayr (1924), Foster *et al.* (1994), Haffer (1987), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Parker (2003a), Parker & Bailey (1991), Parker *et al.* (1991), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Sick (1993), Stotz *et al.* (1996), Tallman & Tallman (1994), Terborgh *et al.* (1984), Willis (1984d), Zimmer, J.T. (1944), Zimmer, K.J. (2003a).

# Genus *TARABA* Lesson, 1830

## 9. Great Antshrike

### *Taraba major*

**French:** Grand Batara

**German:** Weißbrust-Ameisenwürger

**Spanish:** Batará Mayor

**Taxonomy.** *Thamnophilus major* Vieillot, 1816, Paraguay.

Relationships uncertain; relationship to the *Thamnophilus doliatus* complex suggested by vocalizations and by barred plumage of juvenile. Two main plumage types, one N & W of Andes (races *melanocrissus*, *obscurus*, *transandeanus*, *granadensis*), the other E of Andes (remaining races); the two populations may merit separate species status if apparent parapatry in Venezuela (Miranda) and possibly significant vocal differences are substantiated. Otherwise, plumage differences in populations of Central America and the Pacific slope appear to be clinal, and recognition of geographical races possibly not warranted; further study required. Plumage and vocal differences of races E of Andes more substantial, but careful analysis required to determine extent of intergradation and constancy of characters. Ten subspecies recognized.

**Subspecies and Distribution.**

*T. m. melanocrissus* (P. L. Sclater, 1860) - Caribbean slope from E Mexico (E San Luis Potosí S to N Oaxaca, Tabasco and N Chiapas) S to W Panama (Bocas del Toro, in Almirante Bay region).

*T. m. obscurus* J. T. Zimmer, 1933 - W Costa Rica (Pacific slope), Panama (except Almirante Bay region) and W Colombia (middle Cauca Valley, and Pacific slope except extreme SW).

*T. m. transandeanus* (P. L. Sclater, 1855) - Pacific slope of extreme SW Colombia (Nariño), W Ecuador, and extreme NW Peru (Tumbes).

*T. m. granadensis* (Cabanis, 1872) - N & C Colombia (Caribbean slope from Magdalena S to Córdoba, S in Magdalena Valley to Tolima, and base of E Andes in Arauca, Casanare, Boyacá and Meta) and NW Venezuela (Zulia and Táchira E to W Miranda).

*T. m. semifasciatus* (Cabanis, 1872) - extreme E Colombia (Vichada), and NE & S Venezuela (E Miranda E to Paria Peninsula, and S of R Orinoco), Trinidad, the Guianas, and NE & SC Amazonian Brazil (S to R Negro and R Amazon, and S of R Amazon, from extreme E Amazonas E to W Maranhão and S to N Mato Grosso and NW Goiás).

*T. m. duidae* Chapman, 1929 - Mt Duida, in Amazonas, S Venezuela.

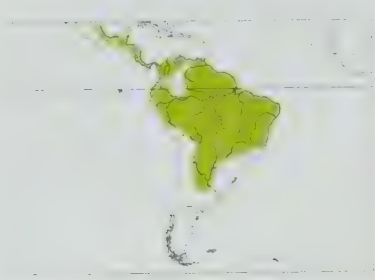
*T. m. melanurus* (P. L. Sclater, 1855) - SE Colombia (Caquetá, Putumayo, Amazonas), E Ecuador, E Peru and SW Amazonian Brazil (S of R Amazon in W Amazonas and Acre E to middle R Purus and N bank of R Abunã).

*T. m. borbae* (Pelzeln, 1868) - SC Amazonian Brazil (E Amazonas along lower R Purus and R Madeira, and extreme N Rondônia).

*T. m. staturus* (M. H. K. Lichtenstein, 1823) - E & NE Brazil (E Maranhão E to Pernambuco and S to E Minas Gerais and Espírito Santo).

*T. m. major* (Vieillot, 1816) - N & E Bolivia, SC Brazil (S Mato Grosso, S Goiás, W Minas Gerais, Mato Grosso do Sul and W São Paulo), W Paraguay (E to both banks of R Paraguay) and N Argentina (S to Córdoba and N Buenos Aires).





**Descriptive notes.** 19–20 cm; 50–70 g. Large bill; prominent crest; red iris. Male nominate race has upperparts mostly black, black extending to below eye on side of head; large white wing-covert spots forming bars, white edges of primaries, white spots on outer tail; white intersecular patch, often concealed; underparts white, flanks tinged grey. Female has crown and tail rufous, lores and ear-coverts browner, upperparts reddish yellow-brown, wing edgings pale; underparts white, tinged cinnamon except on centre of belly, crissum light cinnamon. Juvenile is barred above and below with cinnamon or buff, barring maintained indistinctly in subadult. Races N & W of Andes differ from nominate in male lacking white in upperparts and tail except for wing-covert spots (occasionally white tips on outer rectrices), varying amounts of black and grey on crissum and flanks, female on average darker from N to S, those to E & S differ mostly in number, width and depth of tailbars and extent of grey on rear underparts, females varying in colour intensity corresponding to whiteness of male: *melanocrissus* male has black of head extending below gape, black crissum; *obscurus* is similar but crissum feathers tipped white; *transandeanus* has more white tips on crissum; *granadensis* male has black on head side not extending below gape, crissum even more extensively white; *stagus* has most white on tail, widest wing edgings, least grey on flanks and crissum, female palest; *semifasciatus* has least white on tail, no or thin white wing edgings, deeper grey on crissum; *duidae* resembles previous but larger, female is darker with underparts indistinctly streaked and barred blackish; *borbae* has moderate white on tail and wings, light grey crissum; *melanurus* male has tail black but crissum white (sometimes dusky feather centres), flanks white. **Voice.** Loudsong a long, accelerating series of c. 40 notes, 5–14 seconds, usually ending in a snarl; typically shorter and often without final snarl in races N & W of Andes; race *stagus* often doubles the snarl; shorter, slower-paced version, usually lacking the snarl, is also delivered by some races, especially by females. Calls vary geographically, include long decelerating rattle sometimes ending with a distinct note, shorter rattles often repeated rapidly, a decelerating rolling series of whistles, evenly paced series of harsh notes and of more musical notes, downslurred growl, and somewhat clear, high-pitched whine.

**Habitat.** Understorey of dense thickets in gallery forest, savanna woodland, second growth, and edges and clearings in evergreen forest, mostly below 1000 m, locally to 2200 m. Race *stagus* found in deciduous *caatinga* woodland in NE Brazil; in SC Brazil, nominate race is particularly common in swampy stands of savanna woodland and shrubby borders of gallery forest in the Pantanal region.

**Food and Feeding.** Feeds on a variety of insects, other arthropods, and snails and other molluscs; also small vertebrates, including lizards, frogs, tadpoles, minnows, small mammals; also takes vegetable matter. Regional variation in diet appears to be substantial. Stomach contents from Brazil include beetles of nine groups (Halticinae, Carabidae, Rutelidae, Melolonthidae, Elateridae, Curculionidae, Tenebrionidae, Scarabaeidae, Brentidae); true bugs (Pentatomidae, Cicadidae); adults, larvae and pupae of hymenopterans (Formicidae, Chalcididae, Vespidae, Apoidea); also orthopterans (Tettigoniidae, Gryllidae, Acrididae), termites (Termitidae), diplurans (Spirostreptidae), lepidopteran larvae, dipteran larvae (Stratiomyidae, Brachycera), snails (Gastropoda); and a small fruit. Stomachs of birds from an island in the R Paraná, in Argentina, contained seeds, crustaceans (Trichodactylidae), insects (especially Hymenoptera and Coleoptera), arachnids, molluscs (especially Ampullariidae), and small mammals (Rodentia). Birds from

Surinam had eaten Hemiptera, Heteroptera, Coleoptera (Halticinae), Hymenoptera (Formicidae, Chalcididae, Vespidae) and Orthoptera (Acrididae). Individuals or pair-members forage in dense thickets and vine tangles, from the ground to 5 m up, seldom higher, almost always remaining within cover, and progressing sluggishly by short, heavy hops, pausing between movements to scan for prey. Reaches or sometimes jumps up to glean prey directly from leaf, stem, vine and branch surfaces, also routinely drops from low perches to take prey from ground. In the Pantanal region of Brazil has been observed foraging in the open, using leaves of water hyacinths as platforms from which to extract aquatic insect larvae, frogs, tadpoles and minnows from shallow pools. Sometimes joins mixed-species flocks, particularly in gallery forest and deciduous *caatinga* woodland. Occasionally attends swarms of army ants (both *Eciton burckhelli* and *Labidus praedator*), generally staying 1–5 m above ground and gleaning prey from foliage, vines and branches. In Trinidad, where obligate ant-following antbirds are absent, it behaves like one of those, perching low above the swarm and repeatedly sallying to ground to seize prey flushed by the ants; also very aggressive in supplanting tanagers (Thraupidae), woodcreepers (Dendrocolaptidae) and conspecifics attending swarms.

**Breeding.** Apr–Jul in Costa Rica, Mar and May–Jul in Trinidad, Jan–Jun in Surinam, Jan–Apr in Brazil (Pará) and Oct–Dec in Argentina. Nest in Argentina a suspended cup 7–11 cm in height, 9–14 cm in external diameter, of vegetable fibres tied to two parallel or forked branches, 1–2.1 m above ground, with fibres, stems, straws and a few small leaves and lichens mixed in, the structure being somewhat porous; in Brazil a deep cup suspended from branch fork, well constructed of strong, black fibres, and without green ornamentation; in Costa Rica a bulky cup 15 cm high and 12.5 cm in diameter, suspended by rim, with a frame of coarse dry vines supporting a middle layer of strips of monocot leaves, lined with thinner vines, 1.5–2.5 m up in thicket, often near edge; in Surinam an open cup placed between branches of a shrub; in Trinidad a deep, pensile cup suspended below a horizontal fork or crossed vines, usually within 3 m of ground, strongly woven of black horsehair-like fibres or grass stems, but no distinct lining and the bottom thin enough that eggs can be seen through nest from below. Normal clutch 2 or 3 eggs, 3 more common in extreme S of range, colour and pattern geographically variable, generally dull or creamy white to pale buff, variably blotched and streaked with blackish, chocolate-brown, ash-grey, purplish, vinaceous-brown, cinnamon and/or pale lilac, markings typically concentrated at larger end (sometimes forming darker crown or wreath); incubation by both sexes during day, by female at night, period 17–18 days; nestling period 12–13 days in Costa Rica. In Argentina, nests frequently parasitized by Shiny Cowbirds (*Molothrus bonariensis*).

**Movements.** Presumed resident throughout most of range; some ringing evidence suggests possible seasonal movements in N Argentina.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of its extensive range. Occurs in several protected areas. Its preference for a variety of edge and second-growth habitats makes it a low-sensitivity species. Exception is race *stagus* of NE Brazil, which is reliant on threatened deciduous forest and tall *caatinga* habitats.

**Bibliography.** Alabarce & Lucero (1977), Belcher & Smoother (1936), Beltzer (1987), Blake & Loiselle (2001), Christiansen & Pitter (1989), Cody (2000), Cory & Hellmayr (1924), Eisentraut (1935), French (1991), Fraga & Narosky (1985), Hartert & Venturi (1909), Haverschmidt & Mees (1994), Hellebrekers (1942), Hilty (2003a), Hilty & Brown (1986), Ihering (1900), Isler & Whitney (2002), Kreuger (1968), Meyer de Schauensee & Phelps (1978), Morales (1999), Nehrhorn (1899), O'Neill & Pearson (1974), Oates & Reid (1903), Oniki (1972a), Oniki & Willis (1972), Parker (2003a), Peixoto Velho (1932), de la Peña (1975, 1983a, 1995), Pereyra (1938), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Schönwetter & Meise (1967), Schubart *et al.* (1965), Sick (1993), Skutch (1945a, 1946, 1969c, 1976), Slud (1964), Smyth (1928), Sneath (1935), Stiles & Skutch (1989), Stotz *et al.* (1996), Tallman & Tallman (1994), Tostain *et al.* (1992), Wetmore (1972), Willis (1984d), Zimmer, J.T. (1933c), Zimmer, K.J. (2003a).



PLATE 41





PLATE 41

mebes 3  
cm 8



# Genus *SAKESPHORUS* Chubb, 1918

## 10. Black-crested Antshrike

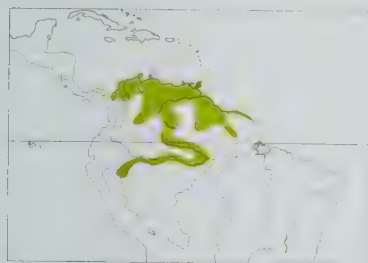
### *Sakesphorus canadensis*

**French:** Batara huppé **German:** Schwarzgesicht-Ameisenwürger **Spanish:** Batará Crestinegro

**Taxonomy.** *Lanius canadensis* Linnaeus, 1766. Canada; error = Cayenne, French Guiana. Probably forms a superspecies with *S. cristatus* and *S. bernardi*. Race *pulchellus* appears to be morphologically and vocally distinct from others and may deserve species status; this taxon and proposed races *phainoleucus* (Río Chaco, in N Colombia) and *paraguanae* (Paraguana Peninsula, in NW Venezuela) appear to intergrade, and are better merged. Differences among some or all of the other races may be clinal, and individual plumage variation within each substantial; distributional limits therefore unclear. Six subspecies recognized.

#### Subspecies and Distribution.

*S. c. pulchellus* (Cabanis & Heine, 1859) - N Colombia (Caribbean slope from Guajira S to N Chocó, lower Magdalena Valley S to S Santander) and extreme NW Venezuela (Zulia, W & C Falcón, Lara).  
*S. c. intermedius* (Cherrie, 1916) - E Colombia (Vichada and Meta) and Venezuela N of R Orinoco (E Falcón, Portuguesa and Apure E to Anzoátegui).  
*S. c. trinitatis* (Ridgely, 1891) - NE & S Venezuela (Sucre, Monagas, Delta Amacuro and S of R Orinoco, Bolívar and N Amazonas), Trinidad and Guyana.  
*S. c. canadensis* (Linnaeus, 1766) - Surinam and coastal French Guiana.  
*S. c. fumosus* J. T. Zimmer, 1933 - SW Venezuela (S Amazonas) and extreme N Brazil (N Roraima, extreme N Pará).  
*S. c. loretoyacuensis* (Bartlett, 1882) - locally in NW Amazonian Brazil (along R Negro, R Branco and R Solimões), extreme SE Colombia (SE Amazonas) and NE Peru (along R Amazon, lower R Marañón and R Ucayali).



**Descriptive notes.** 14-15.5 cm; 22-27 g. Crested. Male nominate race has head, throat and centre of breast black, a few white speckles around bill, white band on nape down to breast side; upperparts cinnamon-brown; wings and tail black, edged white, white spots on tips of outer tail feathers; lower underparts whitish-grey, greyer on flanks and crissum. Female has crown rufous, forehead paler with black feather bases, greyish face, cinnamon nape and neck side, upperparts as male; wings and tail brownish-black, edged white on tertials and buffy white on primaries, tail edged and tipped white; breast cinnamon, streaked blackish.

ish, throat and posterior underparts whitish, tinged buff. Subadult male resembles female, may be sexually mature in that plumage. Races vary in darkness and colour intensity: *pulchellus* is palest, with extensive white speckling within black hood, upperparts pale cinnamon with sometimes few black streaks, much white on wings and tail, extensively white below, female pale with breast unstreaked; *fumosus* is darkest, upperparts blackish-brown (sometimes verging on black), only a hint of white surrounding black hood, underparts slate-grey, minimal white on tail, female dark with breast heavily streaked; *loretoyacuensis* resembles previous, but male nape and underparts more like nominate; *intermedius* and *trinitatis* are very similar to nominate. VOICE. Loudsong a series of c. 10-15 notes, initially flat with complaining quality, then rising in pitch while accelerating rapidly; also a variable, more slowly delivered (e.g. 21 notes in 9 seconds) series of simple notes that sometimes accelerates slightly. Calls include a complex downslurred note that sounds as if squeezed out, and abrupt "chup" notes repeated often; rattle call introduced by a long clear note.

**Habitat.** Understorey and mid-storey of deciduous woodland, gallery forest, savanna woodland, and shrubby borders of seasonally flooded *igapó* and *várzea* evergreen forest, to 900 m. Locally in mangroves and dense scrub growing on coastal sand dunes, especially in coastal Surinam and French Guiana; in thickets and bushy places in areas of low rainfall in N Colombia (*pulchellus*). Throughout most of range, most common in semi-arid and seasonally deciduous habitats. In humid, forested lowlands is usually restricted to edges with significant shrub cover and abundant vines, often along rivers. Found in gardens and city parks in some areas.

**Food and Feeding.** Feeds primarily on a variety of insects, including true bugs (Hemiptera, Homoptera), beetles (Coleoptera), adult and larval lepidopterans, orthopterans, as well as other arthropods, particularly spiders; at least occasionally, also takes small lizards, and fruit (Loranthaceae, *Capsicum*). Forages singly or in pairs, or sometimes with mixed-species flocks, from ground to heights of 10-15 m, concentrating especially in vine tangles and dense foliage, progressing by short hops separated by pauses to scan for prey. Less sluggish than larger antshrikes, with shorter pauses between hops, more frequent changes of direction. Reaches out, up or down to perch-glean prey from leaf, vine, stem and branch surfaces, occasionally making a short jump or wing-assisted hop upwards to take an item from underside of overhanging leaf; also drops from low perches to take prey from ground.

**Breeding.** Jun-Sept in Venezuela, May-Jul in Trinidad, Mar-May in Guyana, Dec-Jul in French Guiana; breeds throughout year in Surinam (nests with eggs found in all months except May, Jul and Oct), with pairs documented as nesting twice in one year. Nest in Trinidad a deep, pensile cup suspended below horizontal fork or crossed vines 2-9 m above ground, and strongly woven of black, horsehair-like fibres, but porous in construction with eggs visible through nest from below; in Venezuela a thin-walled cup, rather loosely though neatly woven, suspended in fork of horizontal twig; in Surinam a neatly built, open basket of fine grasses, built by both sexes, moss and spider webs used in construction of inner cup, suspended in fork between twigs of low shrub, nest reused for second brood. Courtship feeding before eggs laid recorded in Surinam. Normal clutch 2 eggs, sometimes 3, whitish or pinkish with variable amounts of purplish, chestnut or brown blotches or streaks; incubation shared by both sexes during day, only by female at night, period in Surinam 14 days; nestlings fed and brooded by both sexes, but only female broods at night; faecal sacs of nestlings swallowed by parents or, if large, carried away from nest.

**Movements.** Presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Generally common throughout its large range. Occurs in Amacayacu National Park, in SE Colombia. Utilization of variety of habitats, including many second-growth and disturbed habitats, buffers this species against any potential threats. Some local populations, particularly those restricted to dry forest, may, however, prove more sensitive. **Bibliography.** Avelado & Pérez (1994), Belcher & Smooker (1936), Cherrie (1916a), Cory & Hellmayr (1924), Darlington (1931), Dugand (1947), French (1991), Haverschmidt (1953, 1965), Haverschmidt & Mees (1994), Hellebrekers (1942), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Junge & Mees (1958), Kreuger (1968), Nehrkorn (1899), Novaes (1980), Pacheco (1995), Reynaud (1998), Ricklefs (1976), Ridgely & Tudor (1994), Ridgely (1911), Schäfer & Phelps (1954), Sick (1993), Snyder (1966), Stotz *et al.* (1996), Tostain (1986a, 2003), Tostain *et al.* (1992), Young (1925), Zimmer, J.T. (1933c), Zimmer, K.J. (2003a).

## 11. Silvery-cheeked Antshrike

### *Sakesphorus cristatus*

**French:** Batara à joues argent **German:** Silberwangen-Ameisenwürger **Spanish:** Batará Crestado

**Taxonomy.** *Thamophilus cristatus* Wied, 1831, Bahia, Brazil.

Probably forms a superspecies with *S. canadensis* and *S. bernardi*. Monotypic.

**Distribution.** NE Brazil in C Ceará. SE Piauí, W Pernambuco, Bahia (except coast) and N Minas Gerais (S to upper São Francisco Valley).



**Descriptive notes.** 14 cm. Crested. Male has forehead, crest, anterior face, throat and centre of breast black, rest of head and underparts greyish-white; back drab brown; wings and tail black, wing-coverts tipped white, remiges edged cinnamon, tail spotted and tipped white. Female differs in having forehead and crown rufous, rest of head and underparts pale buffy brown, remiges browner, tail rufous-brown. VOICE. Loudsong a short series (e.g. 10 notes, 2-5 seconds), initially sharp and strident, then raspy, often ending in lower-pitched growl; accelerates and then decelerates. Calls include deep clear whistle, and more abrupt clear note

sometimes repeated rapidly 3-4 times.

**Habitat.** Understorey and mid-storey of deciduous forest and arid lowland *caatinga*, to 1100 m. Most common where shrub and tree canopies at least 4-5 m tall, interlacing, and provide fairly continuous cover, as in *mata-de-cipó* woodland. Also found in ecotones between deciduous woodland and patches of ridgetop evergreen forest, particularly where vines abundant.

**Food and Feeding.** Not well known. Feeds on variety of insects and other arthropod prey. Forages individually or in pairs, or sometimes with mixed-species flocks, from ground to heights of more than 10 m, usually remaining within dense cover. Most commonly observed foraging 0-2 m above ground, alternately hopping up on to low, open branches or vines, and then back to ground, always moving slowly and pausing for 1-5 seconds between hops to scan for prey. Prey generally gleaned by reaching upwards to pick items directly from undersides of branches, vines or overhanging leaves; also routinely pounces on terrestrial prey from above. Sometimes hitches upwards through hanging tangles of vines along major trunks, perch-gleaning prey from all leaf and vine surfaces.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Generally fairly common within its small range. Occurs in Cavernas do Peruaçu National Park, in Minas Gerais. *Mata-de-cipó* and taller *caatinga* woodlands are habitats under increasing threat from agricultural conversion, grazing, and cutting for firewood. Creation of reserves that protect large areas of *mata-de-cipó* would benefit present species as well as many of greater conservation concern, such as *Rhopornis ardesiacus* and *Formicivora iberingi*.

**Bibliography.** Cory & Hellmayr (1924), Isler & Whitney (2002), do Nascimento *et al.* (2000), Olmos (1993), Ridgely & Tudor (1994), Sick (1993, 1997), Stotz *et al.* (1996), Zimmer (2003a).

## 12. Collared Antshrike

### *Sakesphorus bernardi*

**French:** Batara de Bernard **German:** Fleckengesicht-Ameisenwürger **Spanish:** Batará Collarejo  
**Other common names:** White-naped Antshrike

**Taxonomy.** *Tamophilus* [sic] *Bernardi* Lesson, 1844, Guayaquil, Guayas, Ecuador.

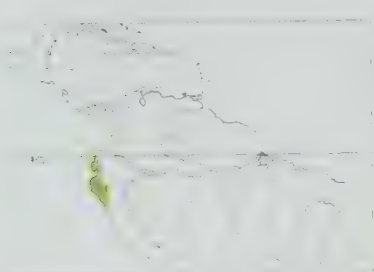
Probably forms a superspecies with *S. canadensis* and *S. cristatus*. Some plumage differences among Pacific slope populations are inconstant and others appear to be clinal; diagnostic differences of described races *piurae* and *cajamarcae* (SW Ecuador, NW Peru) not discernible, and those forms are therefore merged with nominate, pending further study. Two subspecies recognized.

#### Subspecies and Distribution.

*S. b. bernardi* (Lesson, 1844) - WC & SW Ecuador (Manabí, Guayas including Puna I, El Oro, Loja) and NW & NC Peru (Pacific slope in Tumbes and Piura S to N Ancash).  
*S. b. shumbae* Carriker, 1934 - NC Peru (R Marañón drainage in Cajamarca and Amazonas).

**Descriptive notes.** 16-17 cm, 15-16 cm (*shumbae*); 30-38 g. Male has head, throat and upper breast black, speckled white around bill, white from nape to breast side and remaining underparts; upperparts mostly cinnamon-brown, white interscapular patch; wings and tail black, wing-coverts with white edges and spots, flight-feathers edged whitish-buff, tail edged and spotted white; on Pacific slope, some males more extensively speckled white on forehead, some with less black and more white on throat and breast. Female has rufous crown sometimes intermixed with black, forehead and side of head speckled dark brown on dusky white, broad band on nape and remaining underparts buffy white, wings blackish-brown, wing-coverts and flight-feathers edged and spotted buffy white, tail rufous; on Pacific slope, some females have forehead more extensively speckled white, and some have hindcrown or even entire crown black, and wing-covert tips and flight-feather edgings vary from almost white to yellow-ochre. Race *shumbae* has extensive white speckling





around bill, black of throat and breast reduced to patches with white extending through malar region, feather centres on back dark, female has crown entirely rufous, grizzled white on forehead extending over eye, underparts extensively white. **VOICE.** Loudsong a rapidly delivered, short (2-second) series of staccato notes on same pitch, beginning and ending with longer emphatic notes; *shumbae* loudsong faster, final note typically briefer. Other vocalizations include a rattle preceded by abrupt loud note and short pause, a bark followed by a roll, also abrupt clear notes in series, sometimes ending in trill, and long clear

"caw" usually in series of 3-4.

**Habitat.** Understorey to canopy of tropical deciduous forest and lighter woodland, lowland arid scrub, and riparian thickets; locally in coastal mangroves. Mostly below 1000 m, locally to 1850 m.

**Food and Feeding.** Little recorded. Feeds mostly on variety of insects, including true bugs (Hemiptera, Homoptera), orthopterans, beetles (Coleoptera) and lepidopteran larvae, and other arthropods, particularly spiders; may also take nestlings or eggs of small birds, as frequently mobbed by hummingbirds (Trochilidae), seedeaters (*Sporophila*) and grassquits (*Tiaris*). Individuals or pairs generally forage apart from mixed-species flocks, often hopping on ground beneath thickets and taking prey directly from leaf litter, alternately hopping up on to low perches on open branches or vines to scan before dropping back down. Also works methodically through thickets, vine tangles and foliage to 10 m above ground, seldom higher, progressing by short hops separated by pauses to scan foliage. Terrestrial prey usually pounced on from above; other items gleaned by reaching out, up or down with quick stabbing motions of the bill. During foraging habitually wags tail up and down in a shallow arc, particularly when changing perch.

**Breeding.** Jan-Apr in Ecuador, with all nests started after onset of rainy season; single nest in May in Peru. In Ecuador (12 nests) a deep cup, internal measurements 6-6.5 cm across, 5-6 cm deep, of dead grasses and plant stems without lining, and neatly but loosely woven so that contents visible from outside, suspended 0.74-1.85 m above ground from bifurcating twigs, typically in *arrayan* shrubs, reasonably covered but not well hidden; single known nest in Peru (Lambayeque) a well-made cup, external measurements 11.5 cm across, 8.5 cm deep, made of vine stems (primarily) and leaves, lined with coarse grasses or vine stems, and also including small balls of cotton-like plant fibres, placed c. 2-3 m up in an overo shrub in shade of a tall acacia (*Acacia*). Normal clutch 2 or 3 eggs, creamy white, blotched and streaked boldly with dark chocolate-brown over lavender-brown, usually in a zone around large end, with scattered dots elsewhere; incubation recorded only for female, but probably shared by both sexes, period 15-16 days; chick hatches naked, skin deep purple or reddish-brown, quills sprout in 6-7 days, development so rapid that nestling well feathered at 9 days; nestling period at one nest 11-12 days. Of 11 nests in Ecuador, 3 successful, giving productivity of 8 young from total of 28 eggs; 4 of those nests, and the one from Peru, were parasitized by Shiny Cowbirds (*Molothrus bonariensis*).

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Tumbesian Region EBA and Marañón Valley EBA. Occurs in Machalilla National Park, in Ecuador. Generally fairly common in a variety of arid and semi-arid habitats, including ones subjected to moderate levels of grazing by livestock. Seemingly a low-sensitivity species. Distinctive race *shumbae*, of Marañón Valley, in Peru, needs to be properly censused before its true conservation status can be determined; at present it is best considered data-deficient.

**Bibliography.** Behrstock (2003), Cory & Hellmayr (1924), Friedmann & Kiff (1985), Isler & Whitney (2002), Marchant (1959, 1960), Parker (2003b), Parker & Carr (1992), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schönwetter & Meise (1967), Stotz *et al.* (1996), Zimmer, J.T. (1933c), Zimmer, K.J. (2003a).

### 13. Black-backed Antshrike

#### *Sakesphorus melanonotus*

**French:** Batara à dos noir **German:** Schwarzweißer Ameisenwürger **Spanish:** Batará Dorsinegro

**Taxonomy.** *Thamnophilus melanonotus* P. L. Sclater, 1855, Santa Marta, Magdalena, Colombia. Has historically been considered most closely related to *S. canadensis* on basis of morphology, but is vocally quite distinct. Monotypic.

**Distribution.** Caribbean slope in N Colombia (S & W to N Bolívar) and NW Venezuela (E to Miranda).

**Descriptive notes.** 15-16 cm. Male is black to blackish-brown, except for white edges of scapulars, white interscapular patch, light grey posterior upperparts, wing-coverts broadly tipped white, flight-feathers edged white, graduated tail with white tips and edges of outer feathers, white flanks, lower belly and much of crissum. Female differs in having dark brown crown feathers edged cinnamon, brown upperparts with dark feather centres, brownish-black wing-coverts and wings tipped and edged pale buff to white, rufous-brown tail with whitish tips and edges; underparts pale buff, whitest on belly. Juvenile is like female, but crown blackish-brown; subadult male resembles female, but usually some black feathers emerging. **VOICE.** Four vocalization types recorded. A descending "aawr", repeated at regular intervals, believed to be loudsong; possible alternative loudsong is a short (e.g. 0.8-second) rapid rolling series of notes, all descending in pitch except for lower-pitched introductory note; other calls include two-part "ee-ohr", second part lower in pitch, and abrupt "pip" notes.

**Habitat.** Understorey and mid-storey of deciduous forest, to 500 m; occasionally to 1300 m, in Venezuela. Favours disturbed areas or riparian arroyos with extensive evergreen thickets, within arid woodland, particularly where vines abundant. Appears to require more humid, densely vegetated micro-habitats than *S. canadensis* in regions where the two occur together.

**Food and Feeding.** Little known. Feeds primarily on various insects, including true bugs (Hemiptera, Homoptera: Cicadidae), orthopterans and lepidopteran larvae, and other arthropods. Forages individually or in pairs, mostly 0-6 m above ground, particularly in vine tangles and deciduous thickets, with short hops separated by pauses of up to several seconds to scan for prey. Routinely wags tail slowly up and down while foraging. Reaches out, up or down to glean prey directly from leaf,

stem, vine and branch surfaces; also frequently makes jumping upward sallies to glean items from undersides of overhanging vegetation, or pounces on terrestrial prey from low perches. Occasionally attends army-ant swarms; does not typically associate with mixed-species flocks.

**Breeding.** Little known. Mar-Jul in N Colombia. Nest in Colombia an open, unlined cup, suspended by rim to thorny bush; contained 2 eggs, white, with dark purple smudges and spots almost exclusively in wreath at blunt end.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Caribbean Colombia and Venezuela EBA. In Venezuela, occurs in Henri Pittier National Park and also at Chichiriviche, the latter a good base from which to explore nearby Morrocoy National Park. Generally uncommon within its small range. Conversion of much of the dry and semi-deciduous forest of the region to agriculture (particularly pasture for goats) is a potential threat that needs to be monitored. Surveys are required in order better to assess population levels of this species.

**Bibliography.** Allen (1905), Aveledo (1957), Cory & Hellmayr (1924), Darlington (1931), Hilty (2003a), Hilty & Brown (1986), Iafrenco *et al.* (1987), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Ridgely & Tudor (1994), Schäfer & Phelps (1954), Schönwetter & Meise (1988), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Todd & Carriker (1922b), Vereá & Solórzano (1998, 2001), Willis (1984d), Zimmer (2003a).

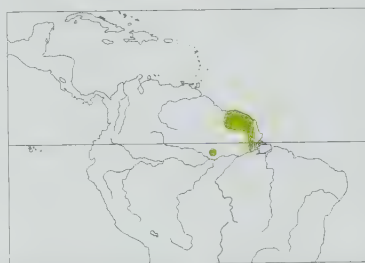
### 14. Band-tailed Antshrike

#### *Sakesphorus melanothorax*

**French:** Batara de Cayenne **German:** Schultersfleck-Ameisenwürger **Spanish:** Batará Guayanés  
**Other common names:** Black-throated Antshrike(!)

**Taxonomy.** *Thamnophilus melanothorax* P. L. Sclater, 1857, Cayenne, French Guiana. Relationships uncertain. Monotypic.

**Distribution.** Surinam, French Guiana and NE Amazonian Brazil (Amapá; also one reliable sight record from N of Manaus, in Amazonas).



**Descriptive notes.** 16-17 cm; 31 g (one individual). Male is entirely black, except for concealed white scapular patches, small white wing-covert spots, and a broad white band across tail tip. Female has crown, upperparts, wings and tail bright deep rufous, lower forehead, face, throat and breast black, posterior underparts becoming grey, suffused with reddish-brown on flanks and crissum. **VOICE.** Loudsong a short (e.g. 7 notes, 3 seconds) series of deep, downward-inflected, somewhat muffled notes that speed up and end with two more abrupt notes. Call a muffled, nasal growl, sometimes doubled.

**Habitat.** Not well known. Understorey and, to lesser extent, mid-storey of evergreen forest where dense stands of lianas and other dense growth associated with naturally disturbed areas, such as treefalls; also in areas of human disturbance that have grown over with vegetation. Also found in swampy, bushy depressions and in dense thickets at edges of rivers. May have specialized habitat requirements that remain to be documented in detail. From near sea-level to 550 m.

**Food and Feeding.** Little known. Diet assumed to consist primarily of a variety of insects and other arthropods. Individuals or pairs forage in dense cover, 0-10 m above ground, progressing by short hops separated by pauses of 1-15 seconds to scan for prey. Prey gleaned directly from leaf, vine and branch surfaces, or from ground. Does not regularly associate with mixed-species flocks.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Poorly known, and should perhaps be given conservation status of Data-deficient. Appears to be a rare, low-density species throughout its range. Although its precise habitat requirements are not well understood, on a broad scale, there would appear to be large intact areas of potentially suitable habitat remaining in Surinam, French Guiana and Brazil (Amapá). More research into the habitat requirements and population levels of this species is needed.

**Bibliography.** Cory & Hellmayr (1924), Haverschmidt & Mees (1994), Isler & Whitney (2002), Ridgely & Tudor (1994), Sick (1993), Stotz *et al.* (1996), Thiollay (1994), Tostain (1980a, 1980b), Tostain *et al.* (1992), Willis & Oniki (1988a), Zimmer (2003a).

### 15. Glossy Antshrike

#### *Sakesphorus luctuosus*

**French:** Batara luisant **German:** Trauerameisenwürger **Spanish:** Batará Luctuoso

**Taxonomy.** *Lanius luctuosus* M. H. K. Lichtenstein, 1823, Cametá, Pará, Brazil.

Relationships uncertain. Race *araguayae* may represent the end point of a cline. Two subspecies recognized.

**Subspecies and Distribution.**

*S. l. luctuosus* (M. H. K. Lichtenstein, 1823) - C & E Amazonian Brazil, on both banks and along S tributaries, from EC Amazonas E to Pará (except S R Araguaia drainage) and S to NE Rondônia and N Mato Grosso.

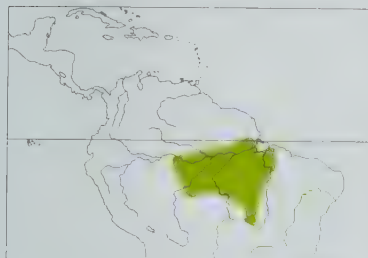
*S. l. araguayae* (Hellmayr, 1908) - S R Araguaia drainage in Tocantins, Goiás and SE Mato Grosso.

**Descriptive notes.** 17 cm; 27-33 g. Prominent crest. Male is black, with dark grey on posterior upperparts and underparts, partially concealed white under scapulars, and large white tail tips. Female differs in having forehead and crest deep chestnut-brown. Subadult male is like female, but crest usually shows emerging black feathers. Race *araguayae* differs from nominate in broader white edges under scapulars, less white at tips of rectrices. **VOICE.** Loudsong a moderately long (3-6 seconds) accelerating series of 8-20 strident clear notes, varying only slightly in pitch. Other vocalizations include a slowly repeated series of downslurred whistles: soft and raspy "caw" notes; also long downslurred whistle, and shorter downslurred whistle that immediately becomes a short rattle.

**Habitat.** Understorey and mid-storey of flooded evergreen forest, riparian forest and adjacent humid second growth in lowlands, below 250 m. Occupies mainly the shrubby, viny, margins of flooded *várzea* and *igapó* forests. Locally common on forested river islands. Also occurs along margins of small tributaries of major rivers that are not subject to extensive flooding.

**Food and Feeding.** Feeds primarily on a variety of insects, including true bugs (Hemiptera), katyids (Tettigoniidae), beetles (including Curculionidae) and lepidopteran larvae, and other





arthropods (particularly spiders). Forages singly or in pairs, only occasionally with mixed-species flocks, in dense thickets (often over water) and vine tangles, from ground level to 15 m up, progressing by short hops separated by pauses of 1-15 seconds to scan for prey. Reaches out, up or down to glean items from all leaf, stem, vine or branch surfaces with quick stabbing motion of the bill; occasionally makes short, upward-directed sallies to take food from overhanging vegetation; also occasionally drops to ground to take terrestrial prey. The crest is typically laid flat when foraging; when agitated, raises crest, raises

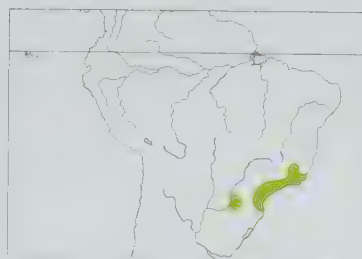
and fans tail, and droops wings.

**Breeding.** Only one nest known, found in Dec in SE Pará (R Itacatuas); described as a pendent bag c. 8 cm deep, made of dark, fibrous plant material with some paler, thicker leaves worked into sides, placed c. 1 m from trunk in crown of small tree 3 m tall, the only arboreal vegetation on a small rocky island surrounded by fairly fast-flowing water; both parents fed nestlings.

**Movements.** Presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Generally fairly common throughout its range, which includes extensive areas of suitable habitat, some of which are formally protected, e.g. Cristalino State Park, Araguaia National Park and Caxiuanã National Forest. Reliance on flooded-forest habitat makes this species less prone to disturbance, and its ability to colonize adjacent disturbed second-growth thickets suggests a low sensitivity.

**Bibliography.** Cory & Hellmayr (1924), Isler & Whitney (2002), Oren & Parker (1997), Parker (2003a), Remsen & Parker (1983), Ridgely & Tudor (1994), Sick (1993), Sneath (1913), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Whitney (2003b), Zimmer (2003a), Zimmer, Parker *et al.* (1997).



**Habitat.** Understorey and mid-storey of bamboo-rich evergreen forest and older second growth, at 500-1200 m. Primarily in foothills, and in some areas confined to elevations within the fog belt. Presence of large-leaved bamboo, probably mostly of genus *Merostachys*, a critical component of habitat; in some areas of Brazil, e.g. Itatiaia National Park (Rio de Janeiro) and Iguaçu National Park (Paraná), has been found only in the most extensive stands of *Merostachys*, where the bamboo formed columns that climbed into lower canopy and nearly covered many medium-sized trees. Also found in ecotone between *cerrado* and humid,

older second growth (in Minas Gerais) and in *Araucaria*-dominated forest (in Paraná), but in all cases only where extensive stands of tall bamboo prevalent.

**Food and Feeding.** Diet not well known. Feeds primarily on various insects and other arthropods, particularly spiders; stomach contents of a specimen from Rio de Janeiro included spiders, ants, and many small seeds. Individuals or pairs forage mostly in dense stands of bamboo, 1-10 m above ground, almost always remaining in shaded areas beneath overhanging cover, particularly along larger, horizontal limbs and bamboo stems. Progresses in short hops, with pauses of up to several seconds to scan; more active than larger species of antshrike, with shorter pauses between perch changes, more frequent changes of direction. Reaches out, up or down to glean prey directly from bamboo stems and foliage, and from adjacent vegetation. Frequently makes diagonal upward sallies of up to 1 m to glean prey from undersides of leaves or stems, typically continuing on to different perch to consume the food; also short, vertical sallies to hover-glean from undersides of leaves and stems, before dropping back to same perch. Often associates with mixed-species flocks.

**Breeding.** In Brazil, nest-building in Oct and Nov (Rio de Janeiro) and adult carrying food for young in Dec (Minas Gerais). Both nests under construction were in *Merostachys* bamboo; one c. 7 m above ground, just beneath top of a dense bamboo thicket c. 8 m tall in broken-canopy forest, appeared to be a bowl-like platform supported by several thin, crossing bamboo stems, main material thought to be dead *Merostachys* leaves which both sexes broke from branchlets by grasping and ripping off at base, male also gathered thin pieces of vine and fungal strands (seemingly of *Merasmium*) from surrounding trees.

**Movements.** None recorded; probably chiefly resident, although thought to undertake small-scale movements in response to periodic local die-offs of bamboo.

**Status and Conservation.** **VULNERABLE.** Restricted-range species; present in Atlantic Forest Lowlands EBA. Rare throughout its restricted range; apparently never common. Reliance on bamboo, particularly of genus *Merostachys*, which is known to undergo episodic local die-offs, makes this and other bamboo specialists of the Atlantic Forest particularly vulnerable; such die-offs result in large geographical and temporal discontinuities in availability of suitable habitat. Larger reserves with a diversity of bamboo species, and abundance of extensive bamboo stands at a variety of elevations, are the most likely to retain healthy populations of this antshrike, which appears not to survive in small residual forest patches. Current strongholds seem to be Itatiaia and Serra dos Órgãos National Parks and Desengano State Park, in Rio de Janeiro, Iguaçu National Park, in Paraná, and Iguaçu National Park, in Argentina; also Intervales State Park, in São Paulo. Proposed measures include more extensive surveys to determine the species' true conservation status, and a long-term study of all Atlantic Forest bamboo specialists in order to gain a better understanding of the effects of bamboo cycles on avian populations and ecology.

**Bibliography.** dos Anjos & Boçon (1999), dos Anjos & Graf (1993), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cory & Hellmayr (1924), Gai (1950, 1951), Isler & Whitney (2002), Machado (1999), Parker & Goerck (1997), Pearman (2001), Ridgely & Tudor (1994), do Rosário (1996), Sick (1993, 1997), Stattersfield & Capper (2000), Wege & Long (1995), Whitney (2003b), Willis (1989), Willis & Oniki (1993), Zimmer (2003a).

## Genus *BIATAS* Cabanis & Heine, 1859

### 16. White-bearded Antshrike

#### *Biatas nigropectus*

**French:** Batará à poitrine noire **German:** Weißbart-Ameisenwürger **Spanish:** Batará Pechinegro

**Taxonomy.** *Anabates nigro-pectus* Lafresnaye, 1850, Rio de Janeiro, Brazil. Relationships uncertain. Monotypic.

**Distribution.** SE Brazil (SE Minas Gerais, E São Paulo, Rio de Janeiro, W & E Paraná, NE Santa Catarina) and NE Argentina (Misiones).

**Descriptive notes.** 17-18 cm. Semi-erectile crest often held raised. Male has forehead to upper nape and loreal and ocular regions black, with suggestion of white eyeline; chin and side of head below eye white, becoming pale buff on lower nape (nuchal collar sometimes absent); upperparts reddish yellow-brown, wings and tail rufous; lower throat and breast black, posterior underparts clay-coloured. Female differs in having crown rufous-brown, pronounced white eyebrow, no black on throat and breast. **VOICE.** Loudsong a short (e.g. 8 notes, 3 seconds) series of mournful, moderately long notes (about as long as intervals between them), first and last notes typically slightly shorter and at slightly lower pitch. Call a complaining downslurred note, given in pairs or repeated regularly in longer series.





ssp dolatus

ssp nigrescens

17

ssp radiatus

ssp cadwaladeri

ssp capistratus

18

19

ssp berlepschi

20

ssp temuepunctatus

21

22

PLATE 42

inches 3  
cm 8



# Genus *THAMNOPHILUS* Vieillot, 1816

## 17. Barred Antshrike

### *Thamnophilus doliatus*

**French:** Batara rayé

**German:** Bindenameisenwürger

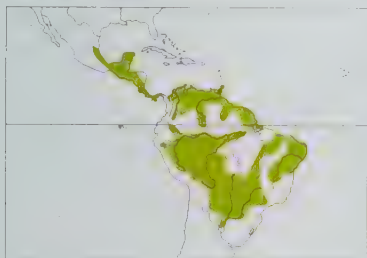
**Spanish:** Batará Barrado

**Taxonomy.** *Lanius doliatus* Linnaeus, 1764, no locality = Surinam.

Belongs to a species group which also includes *T. zarumae*, *T. multistriatus*, *T. temepunctatus*, *T. palliatus*, *T. torquatus* and *T. ruficapillus*. Forms a superspecies with first of those and formerly treated as conspecific, but differs in morphology and vocalizations. Taxonomy of present species in need of study and possible revision; races may constitute more than one species; further, plumage varies considerably within many races, apparently in clinal pattern, and comparisons of morphology with molecular and other characters needed to reconfirm validity of many taxa; current treatment tentative. Other described races are *yucatanensis* (S Mexico, N Guatemala) and *pacificus* (W Honduras to W Costa Rica), which appear inseparable from *intermedius*; *fraterculus* (E Colombia, N Venezuela, Trinidad), considered indistinguishable from nominate; and *subradiatus* (E Peru, W Brazil), *novus* (Mato Grosso) and *signatus* (NE Bolivia, SW Brazil), which appear inseparable from *radiatus*. In addition, birds from N Colombia, formerly considered a disjunct population of *nigricristatus*, intergrade with *albicans* and are therefore included with latter. Twelve subspecies recognized.

#### Subspecies and Distribution.

*T. d. intermedius* Ridgway, 1888 - E Mexico (SE from S Tamaulipas and San Luis Potosí and, on Pacific slope, E from Oaxaca), Belize and Guatemala S to W Panama (W Chiriquí, Bocas del Toro).  
*T. d. nigricristatus* Lawrence, 1865 - C Panama (E Chiriquí and S Veraguas E to W San Blas).  
*T. d. eremmus* Wetmore, 1957 - Coiba I, S Panama.  
*T. d. nesiotetes* Wetmore, 1970 - Pearl Is, S Panama.  
*T. d. albicans* Lafresnaye, 1844 - N & W Colombia (Caribbean slope from Antioquia and Córdoba E to La Guajira, and S in Magdalena Valley to Huila).  
*T. d. nigrescens* Lawrence, 1867 - NC Colombia E of Andes (Norte de Santander) and NW Venezuela N of Andes (Zulia, Táchira, W Mérida).  
*T. d. tobagensis* Hartert & Goodson, 1917 - Tobago.  
*T. d. doliatus* (Linnaeus, 1764) - NE Colombia (S to Caquetá and Guiania), Venezuela (except in NW and, apparently, S Bolívar and E Amazonas, but including Margarita I), Trinidad, the Guianas, and N Amazonian Brazil (extreme N Amazonas on upper R Negro, Roraima, Amapá, and N Pará from vicinity of R Trombetas E to Marajó I).  
*T. d. radiatus* Vieillot, 1816 - extreme SE Colombia (S Amazonas), NE Ecuador (Napo), E Peru (except N Amazonas and W Loreto), W & SC Brazil (N bank of R Amazon E to vicinity of R Trombetas and, S of R Amazon, E to right bank of R Tapajós and R Aripuanã in W Pará and S to Acre, Mato Grosso do Sul, W Paraná and São Paulo), N & E Bolivia, Paraguay and N & NE Argentina (Salta, Formosa, Santa Fe, Misiones).  
*T. d. cadwaladeri* Bond & Meyer de Schauensee, 1940 - S Bolivia (Tarija).  
*T. d. difficilis* Hellmayr, 1903 - EC Brazil (E Maranhão, SW Piauí and extreme SE Pará S to E Mato Grosso, W & S Goiás and extreme W Bahia).  
*T. d. capistratus* Lesson, 1840 - E & S Piauí, Ceará and Rio Grande do Norte S to extreme N Minas Gerais and C Bahia.



**Descriptive notes.** 15–16 cm; 24–30 g. Crested; iris typically straw-coloured, but dark in some regions. Male nominate race has bases of central crown feathers extensively white, tips black, feathers on side of crown black, throat, head side and nape streaked black and white; remaining plumage barred black and white, black bars wider on upperparts. Female is very different, with crown dark chestnut, head side and nape black-streaked pale buff, throat whitish with few dark streaks; upperparts, wings and tail rufous, underparts brownish-yellow, belly palest. Subadult male has pale barring light yellowish-brown white, rather than white.

Races vary primarily in extent of white in crown and tail and relative width of white and black bars (especially below) of male, and in darkness of female: *intermedius* male resembles nominate, but varies in darkness of underparts, palest on Pacific slope (“*pacificus*”) and Yucatan Peninsula (“*yucatanensis*”), female typically darker than nominate (but paler and more ochraceous where male paler); *nigricristatus* male has crown black, centre of belly unbarred or faintly barred, female lacks black streaks on throat; *eremmus* and *nesiotetes* resemble previous, but more deeply coloured; *albicans* male has crown black, centre of belly white, remaining underparts sparingly barred, female pale below with throat white, both sexes becoming progressively darker towards Caribbean coast; *nigrescens* is very dark, male with mostly black crown, black bars much broader than white ones; *tobagensis* male is whiter below, female darker below; *radiatus* male has black crown (forecrown variably spotted white) and is whiter below (black bars reduced or absent in belly centre) in S of range, becoming progressively darker to SE (“*novus*”), W (“*subradiatus*”) and N (“*signatus*”), where black throat stripes become narrower, female paler where male paler; *difficilis* resembles previous, but male forecrown with more white, greyer below, female like dark forms; *capistratus* has shorter and thicker bill, chestnut eyes, male crown black, tail with restricted white spots, female with heavily streaked throat, bars on breast, belly whitish; *cadwaladeri* male is pale, belly almost unbarred, female white below, buff tinge on breast and sides. **VOICE.** Loudsong an accelerating staccato series (e.g. 20 notes in 3 seconds, but variable) of sharp nasal notes, begins with soft notes and builds in intensity and slightly in pitch to about halfway into song, ends with long, distinctive, higher-pitched, downward-inflected note; S of R Amazon loudsongs are shorter, accelerate and increase in pitch less initially, but drop more in pitch at end. Variety of calls that appear to vary in repertoires of different races; include a growl, a short “caw”, softened throaty mews and cries, short and long clear whistles; also short series similar to those of trogons (Trogonidae), probably restricted to Central American races.

**Habitat.** Understorey to mid-storey of deciduous forest, second-growth scrub, riparian scrub, river-edge forest and river-island scrub, to 2000 m. Mainly in thickets and shrubby borders at forest edge, often venturing into cultivated areas, gardens and parks with thickets, hedgerows and trees. Occurs in both arid and humid regions, and in many parts of range is something of a habitat generalist. Contrastingly, in C & W Amazonia almost exclusively a river-island bird, in NE Brazil largely confined to deciduous *caatinga* woodland, and in savanna regions usually restricted to gallery-forest edge or isolated areas of savanna woodland. On islands where no congeners present, such as Tobago and Panamanian island of Coiba, occurs in almost all micro-habitats, ranging to crowns of trees. Generally replaced by *T. multistriatus* at higher elevations in Colombia.

**Food and Feeding.** Feeds primarily on insects, including beetles (Coleoptera), true bugs (Hemiptera, Homoptera), orthopterans, ants and lepidopteran larvae, as well as other arthropods (particularly spiders). Stomach samples from Panama contained beetles of several families and subfamilies (Elateridae, Curculionidae, Bruchidae, Alticinae), stink-bugs (Pentatomidae), ants and small seeds; samples from S Brazil (Mato Grosso) included beetles (Cerambycidae, Staphylinidae, Chrysomelidae), hemipterans (Reduviidae, Pentatomidae), hymenopterans (Formicidae, Vespoidea, Meliponidae), and small seeds. In Surinam, recorded as eating various hymenopterans (Formicidae, Myrmicinae, Vespidae, Apidae), coleopterans, lepidopterans and termites (Isoptera), as well as berries and other fruits (Loranthaceae, *Capsicum*). Forages singly and in pairs, mostly in dense cover, from ground to 10 m or more; at least in some regions, appears to obtain insects from unusually wide variety of substrates. Birds feeding at ground level typically stay beneath overhanging vegetation, taking prey from ground and frequently jumping up to low perches to scan, before dropping back down. Progresses through vegetation by short, heavy hops and fluttery flights, with intervening pauses of 1–15 seconds to scan for prey. Often ascends columns of vines and epiphytes along larger trunks, hitching from side to side as it climbs. Reaches out, up and down to glean prey from all sides of leaf, stem, vine, branch and even trunk surfaces with quick stabbing motions of bill. Reported to catch flying termites by making short pursuit-flights low above ground. Although does not typically join mixed-species flocks, birds living in gallery-forest habitats more often associate with such flocks. Occasionally attends army-ant swarms.

**Breeding.** Jan–Jun in Costa Rica, Mar–Aug in Panama, Jan–Jun in Guyana, Feb–Sept in French Guiana, Sept–Dec in Brazil and Argentina; breeds throughout year in Surinam and Trinidad. Nest built by both sexes: in Costa Rica, a deep, thin-walled cup of fine vines, tendrils, fungal rhizomorphs, often a few tufts of green moss on outside, fastened by rim in horizontal fork 1–9 m up in thicket; in Guyana, a hammock-like structure thinly but strongly constructed of fine grass-heads, rootlets and (near human habitation) pieces of string and thread, lined with fine grass and cow hair, slung in horizontal fork within 1 m of ground in dense shrub; in Surinam, an open basket of dried grasses, built in fork between twigs of low shrub; in Trinidad, a deep cup of weed and grass stems (sometimes with coarse grass-blades and vine tendrils) with inner lining of fine fibres, suspended by rim to slender horizontal fork 1–10 m above ground; additional nest descriptions available from most parts of range. Normal clutch 2 eggs, less commonly 1, rarely 3, laid on alternate days, whitish, with scratches, blotches and speckles of chocolate-brown, rufous or purplish-brown either over whole surface or concentrated at thicker end; incubation by both sexes, only female at night, period 14 days in Surinam and S Brazil, 15 days in Argentina; both parents assist in feeding chicks, nestling period 11–13 days in Surinam, S Brazil and Argentina. Nesting success from study of five nests in Argentina was 33.3%; brood parasitism by Shiny Cowbirds (*Molothrus bonariensis*) documented from Argentina.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Generally common throughout its extensive range. Adapted to a variety of second-growth and disturbed habitats, making it a low-sensitivity species. Possible exception is race *capistratus* of NE Brazil, which occupies dry forest and *caatinga* woodland, both of which are threatened habitats.

**Bibliography.** dos Anjos (2001a), Aveledo (1946), Belcher & Smoother (1936), Binford (1989), Blake & Loiselle (2001), Cherrie (1916a), Cody (2000), Cory & Hellmayr (1924), Di Giacomo (1998), Ifrench (1991), Fiebrig (1921), Fraga & Narosky (1985), Griscom (1932a), Hackett & Rosenberg (1990), Haverschmidt & Mees (1994), Hellebrekers (1942), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. *et al.* (1998), Isler, P.R. & Whitney (2002), Keeler-Wolf (1986), Kreuger (1968), Krügel & dos Anjos (2000), Land (1962, 1970), Marino (1993), Monroe (1968), Nehrkorn (1899), Novaes (1960), O’Neill & Pearson (1974), Oates & Reid (1903), Oniki (1988), Oniki *et al.* (2002), Ramo & Busto (1984), Reynaud (1998), Ricklefs (1976), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Rowley (1984), Russell (1964), Schönwetter & Meise (1967), Schubart *et al.* (1965), Siek (1993), Skutch (1969c), Slud (1964), Sneath & Schreiner (1929), Snow & Snow (1964), Stiles & Skutch (1989), Stotz, Fitzpatrick *et al.* (1996), Tostain (1979, 2003), Tostain *et al.* (1992), Wetmore (1972), Willis (1983a, 1984d), Young (1925, 1929), Zimmer, J.T. (1930, 1933a), Zimmer, K.J. (2003a).

## 18. Chapman’s Antshrike

### *Thamnophilus zarumae*

**French:** Batara de Chapman **German:** Fahlflanken-Ameisenwürger **Spanish:** Batará de Chapman

**Taxonomy.** *Thamnophilus zarumae* Chapman, 1921, Zaruma, El Oro, Ecuador.

Belongs to the species group that also includes *T. doliatus*, *T. multistriatus*, *T. temepunctatus*, *T. palliatus*, *T. torquatus* and *T. ruficapillus*. Forms a superspecies with first of those and formerly treated as conspecific, but differs in morphology and vocalizations. Plumage differences between races may be clinal. Two subspecies recognized.

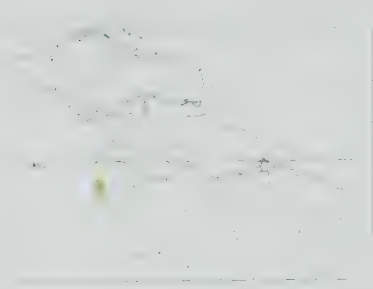
#### Subspecies and Distribution.

*T. z. zarumae* Chapman, 1921 - SW Ecuador (El Oro, Loja) and NW Peru (Tumbes, NE Piura).

*T. z. palambae* J. T. Zimmer, 1933 - NW Peru (SE Piura, E Lambayeque).

**Descriptive notes.** 14–15 cm; 21–23 g. Crested; iris greyish-yellow or brown. Male has forehead heavily spotted black and white, black crown sparsely spotted white, white throat and side of head streaked black; upperparts, wings and tail barred black and white, white bars on rump tinged buff; breast white, thinly barred blackish, posterior underparts pale buff, faintly barred on flanks and crissum. Female has crown dark chestnut-brown, forehead paler, side of head and band behind nape streaked black and pale brownish-yellow, upperparts, wings and tail rufous, wings and tail faintly barred blackish, throat and breast buffy white with faint dusky spotting, remaining underparts buff. Race *palambae* male has white markings on upperparts fainter, lower underparts more heavily barred and tinged ochraceous, female darker-crowned with more barring on sides. **VOICE.** Loudsong constructed of three distinctive parts: an accelerating series of 12–13 sharp nasal notes, 3 longer, louder notes at higher pitch, and short lower-pitched trill. Calls include abrupt “chup”, slightly longer downslurred note, and highly variable squeals.





**Habitat.** Understorey to canopy of semi-arid deciduous forest, adjacent semi-humid forest and secondary scrub, mostly from 800 m to 2100 m, locally to 2650 m. Prefers more densely vegetated and vine-rich micro-habitats. Occurs in dense tangles at forest edge and frequently ventures into semi-open areas; unlike most forms of *T. doliatus*, routinely occupies forest interior as well.

**Food and Feeding.** Not well known. Feeds on variety of insects and other arthropods, including lepidopteran larvae, orthopterans and spiders. Individuals or pairs forage mostly in dense tangles of vegetation, 1-15 m above

ground, progressing by short hops separated by pauses of up to several seconds to scan for prey. Reaches up, out and down to glean items from all leaf, stem, vine and branch surfaces, using quick bill-stabbing motion. A pair in Peru (Tumbes) repeatedly inspected and probed small epiphytic bromeliads scattered along major branches of a large deciduous tree. In Ecuador, observed feeding on berries in upper strata of a tree of the mahogany family (Meliaceae). Frequently associates with mixed-species flocks.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Tumbesian Region EBA. Ongoing deforestation, which has been particularly severe in the Ecuadorian parts of this species' tiny range, could become a potential threat. Continued protection of the Tumbes National Reserve, in Peru, would provide an important population reservoir for this species.

**Bibliography.** Best & Clarke (1991), Cory & Hellmayr (1924), Isler & Whitney (2002), Parker *et al.* (1995), Rasmussen *et al.* (1996), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Zimmer, J.L. (1933a), Zimmer, K.J. (2003a).

## 19. Bar-crested Antshrike

### *Thamnophilus multistriatus*

**French:** Batara de Lafresnaye **German:** Streifenameisenwürger **Spanish:** Batará Crestibarrado

**Taxonomy.** *Thamnophilus multistriatus* Lafresnaye, 1844. Bogotá, Colombia.

Belongs to the "*T. doliatus* group", which also includes *T. zarumae*, *T. tenuipunctatus*, *T. palliatus*, *T. torquatus* and *T. ruficapillus*. Morphological characteristics distinguishing races appear to be clinal (with possible exception of *selvae*); likelihood that geographical ranges of most are disjunct, however, suggests need for careful study of differences among them. Four subspecies recognized.

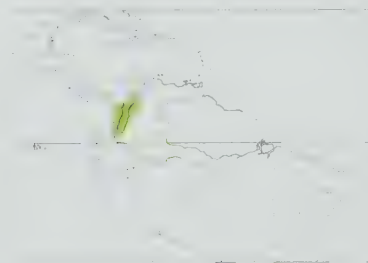
**Subspecies and Distribution.**

*T. m. brachyurus* Todd, 1927 - W Colombia in W Andes (except at R San Juan headwaters) and W slope of C range, in W & C Antioquia, Quindío, Valle and W Cauca.

*T. m. selvae* Meyer de Schauensee, 1950 - W slope of W Andes at headwaters of R San Juan (in Risaralda and Caldas).

*T. m. multistriatus* Lafresnaye, 1844 - E slope of C Andes and W slope of E & S ranges, in Santander, E Antioquia, E Caldas, W Cundinamarca, E Tolima, Huila and E Nariño.

*T. m. oecotonophilus* Borrero & Hernández, 1958 - extreme W Venezuela (Sierra de Perijá) and NC Colombia (W slope of E Andes in Norte de Santander and Boyacá).



**Descriptive notes.** 15-16.5 cm; 21-23 g. Crested; yellowish iris. Male is barred black and white throughout, including crown, except for streaked area from nape to throat. Female is very different, with crown, upperparts, wings and tail rufous, crown slightly deeper and separated from back by narrow band of black-streaked white or pale reddish-brown, head side and throat streaked black and white, underparts barred black and white, tinged reddish-brown on posterior flanks. Female differs from *T. tenuipunctatus* in proportionately wider white bars below that tend more often to be faintly washed with rufous. Subadult male

is like adult, but tinged yellowish-brown on body and flight-feathers; this plumage possibly retained for some time (museum specimens). Race *brachyurus* has shorter tail than nominate, white bars below broader; *selvae* resembles last, but wider black bars below; *oecotonophilus* is like previous, but tail noticeably longer. **Voice.** Loudsong a rapidly accelerating series of 16-20 nasal notes, pitch obviously falling towards end, terminating in unaccented, slightly slurred note.

**Habitat.** Understorey to canopy of deciduous forest, second-growth scrub, and foothill and montane evergreen forest, generally at 900-2200 m; locally down to 250 m on Pacific slope in Colombia. Mainly in thickets and shrubby borders at forest edge, often venturing into semi-open and cultivated areas, gardens, orchards and parks with thickets, hedgerows and trees. Within its limited range, generally replaces *T. doliatus* at higher elevations.

**Food and Feeding.** Little known. Assumed to feed mostly on various insects and arthropods; stomach contents included seeds of a pomegranate (*Punica granatum*). Few precise data on foraging behaviour; said to be similar to that of *T. doliatus*.

**Breeding.** Evidence of breeding in Mar-Jun in Colombia. Nest undescribed. Eggs reported as whitish, thickly spotted and streaked with red-brown at larger end.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Although occupying a fairly small range, this species is considered fairly common. Its preference for edge and second-growth habitats renders it of low sensitivity to environmental disturbance.

**Bibliography.** Borrero & Hernández (1958), Borrero & Olivares (1955), Cory & Hellmayr (1924), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Meyer de Schauensee (1964), Oates & Reid (1903), Ridgely & Tudor (1994), Ridgely (1911), Salaman, Donegan & Cuervo (2002), Schönwetter & Meise (1967), Selater & Salvin (1879), Stotz *et al.* (1996).

## 20. Lined Antshrike

### *Thamnophilus tenuipunctatus*

**French:** Batara vermiculé **German:** Feinstreifen-Ameisenwürger **Spanish:** Batará Vermiculado

**Taxonomy.** *Thamnophilus tenuipunctatus* [sic] Lafresnaye, 1853. "Anolaima" (location uncertain, possibly in Norte de Santander rather than in Cundinamarca), Colombia.

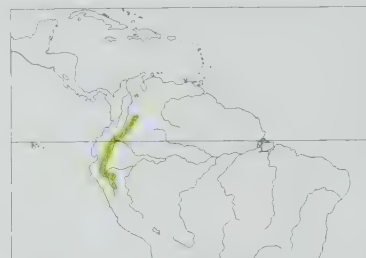
Has been considered conspecific with *T. palliatus*, but they have adjoining ranges with no apparent barriers and no evidence of intergradation. Both belong to the "*T. doliatus* group", which also includes *T. zarumae*, *T. multistriatus*, *T. torquatus* and *T. ruficapillus*. Plumage variation between *tenuifasciatus* and *berlepschi* may prove to be clinal. Three subspecies recognized.

**Subspecies and Distribution.**

*T. t. tenuipunctatus* Lafresnaye, 1853 - E slope of E Andes in NC Colombia (Norte de Santander, Cundinamarca, Meta).

*T. t. tenuifasciatus* Lawrence, 1867 - E slope in SC Colombia (Putumayo) and Ecuador (Sucumbios S to N Zamora-Chinchipec).

*T. t. berlepschi* Taczanowski, 1884 - E slope in extreme SE Ecuador (S Zamora-Chinchipec) and NE Peru (Amazonas, Cajamarca, San Martín).



**Descriptive notes.** 15-16 cm; 22-23 g. Crested; yellowish iris. Male is black, narrowly barred white, except for black crown, black-streaked white throat. Female has crown, upperparts, wings and tail rufous, crown slightly deeper and separated from back by narrow band of black-streaked white or pale reddish-brown, throat and head side streaked black and white, underparts barred black and white, tinged reddish-brown on posterior flanks. Female differs from *T. multistriatus* in relatively narrower white bars below only rarely washed faintly with rufous. Subadult male resembles adult, but tinged yellowish-brown on body and flight-

feathers. Races *tenuifasciatus* and *berlepschi* have white bars nearly as wide as black bars and more white on forehead, females are paler above than nominate and have white bars below wider. **Voice.** Loudsong an accelerating series of abrupt nasal notes that rises in pitch initially, falls towards end, and terminates in strong, downslurred raspy note. Calls include single short "caa", longer flat whistle, and soft staccato rattle of variable length.

**Habitat.** Understorey and mid-storey of humid evergreen-forest edge; also shrubby, regenerating plantations and clearings, and tangled edges of parks and gardens; 300-2500 m, mostly 500-1700 m.

**Food and Feeding.** Little recorded. Feeds primarily on insects and other arthropods. Forages singly or in pairs, mostly in dense thickets and second-growth edge vegetation, to 10 m above ground; progresses by short hops, with pauses of up to several seconds to scan for prey. Reaches out, up and down to glean prey from all surfaces of leaves, stems, vines and branches, using quick stabbing motions of the bill. Does not routinely join mixed-species flocks.

**Breeding.** Nest undescribed. Eggs reported as reddish-grey with very fine rusty-brown and grey-violet spots all over, although spots denser at blunt end.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout its range. This species' ability to utilize a variety of edge and second-growth habitats appears to render it of low sensitivity to environmental disturbance.

**Bibliography.** Cory & Hellmayr (1924), Hilty & Brown (1986), Isler & Whitney (2002), Nehrkorn (1914), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schönwetter & Meise (1967), Schulenberg & Awbrey (1997a), Stotz *et al.* (1996), Zimmer (1933a).

## 21. Chestnut-backed Antshrike

### *Thamnophilus palliatus*

**French:** Batara mantelé **German:** Dunkelmantel-Ameisenwürger **Spanish:** Batará Dorsicastaño

**Taxonomy.** *Lanius palliatus* M. H. K. Lichtenstein, 1823, Bahia, Brazil.

Has been considered conspecific with *T. tenuipunctatus*, but the two have adjoining ranges with no apparent barriers and no evidence of intergradation. Both belong to the "*T. doliatus* group", which also includes *T. zarumae*, *T. multistriatus*, *T. torquatus* and *T. ruficapillus*. The validity and distributional limits of the races of present species are in need of re-examination. Four subspecies recognized.

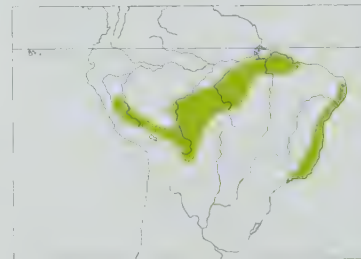
**Subspecies and Distribution.**

*T. p. similis* J. T. Zimmer, 1933 - C Peru (Huánuco, Junín).

*T. p. puncticeps* P. L. Selater, 1890 - SE Peru (Cuzco, Puno), N Bolivia (Beni, La Paz, Cochabamba, Santa Cruz), and Brazil S of R Amazon and W of R Tapajós (extreme SE Amazonas E to extreme SW Pará, S to Rondônia and NW Mato Grosso).

*T. p. palliatus* (M. H. K. Lichtenstein, 1823) - S of R Amazon and E of R Tapajós in N Maranhão, SE Pará and NE Mato Grosso, and coastal NE Brazil (Paraíba S to N Bahia).

*T. p. vestitus* (Lesson, 1830) - coastal E Brazil from S Bahia S to Rio de Janeiro.



**Descriptive notes.** 16-17 cm; 26-28 g. Male has black crown, forehead spotted white, black side of head and nape spotted white; upperparts, wings and tail rufous-brown; throat striped black and white, remaining underparts barred black and white, flanks tinged rufous. Female is like male, but crown deep rufous-brown, light bars on underparts wider. Subadult male resembles adult male, but forehead mixed black and deep reddish-brown, light bars below tinged reddish-brown posteriorly; subadult female is like female, but dark stripes of throat and dark bars of underparts narrower, rear underparts strongly washed yellow-ochre. Races

differ only slightly in intensity and warmth of upperpart colours, relative width of dark and light bars below, and measurements: *similis* resembles nominate; *puncticeps* has upperparts and underparts paler, female nape strongly suffused yellow-ochre; *vestitus* is paler above than previous, darker with broader dark bars below. **Voice.** Loudsong a moderately long (e.g. 20 notes, 2-5 seconds), accelerating series of similar, rapidly delivered, somewhat nasal notes, pitch rising slightly initially, more clearly falling towards end, terminating in longer, firmly accented, downslurred note. Calls include emphatic short nasal note and longer, upward-inflected, squeal.

**Habitat.** Understorey and mid-storey of evergreen-forest borders, taller second growth, regenerating clearings and plantations, and lighter woodland. Andean populations occur primarily from 1000 m to 2200 m, descending to lowlands in C Bolivia, and most often found at forest edges and



clearings with regenerating bamboo. Lowlands in Amazonia, where often in vine-covered trees and shrubs at forest edge and second growth, and in mixed areas of trees and bamboo; in some localities almost restricted to extensive stands of *Guadua* bamboo. Much more of a generalist in coastal E Brazil, and found in shrubby borders of parks and gardens, regenerating plantations and clear-cuts, and at edges of both uncut and degraded evergreen forest, with or without bamboo; to 1000 m, mostly below 300 m.

**Food and Feeding.** Little published. Feeds chiefly on insects, including orthopterans such as grasshoppers (Acrididae), katydids (Tettigoniidae), stick-insects (Phasmatidae) and mantids (Mantidae), beetles (Coleoptera), ants, bees and wasps (Hymenoptera), true bugs (Hemiptera, Homoptera); and lepidopteran larvae; as well as other arthropods, such as spiders. Stomach contents of specimen from Brazil (Pará) included hemipterans, homopterans (Cicadidae), coleopterans (Chrysomelidae, Curculionidae), hymenopterans (Formicidae, Vespoidea, Apoidea) and dipterans (Brachyera). Forages in pairs or individually, in thickets, vine tangles, and in dense canopy foliage of second-growth trees, usually remaining in heavy cover; in much of Amazonia, primarily above 6 m in tangled crowns of bamboo in middle storey, climbing higher to forage in central vine tangles and dense upperstorey foliage of emergent trees (to 15 m). Progresses by short hops, separated by pauses of 1-10 seconds to scan for prey; often hitches from side to side when working upwards through tangles. Reaches out, up and down, or lunges to glean prey from all leaf, stem, vine and branch surfaces with quick stabbing motion of the bill. Often associated, at least loosely, with mixed-species flocks moving through stands of bamboo or tall second growth in its home range. In Andes and SE Brazil, where more a bird of forest edge and scrubby second growth, forages in similar fashion but more often lower, 1-5 m above ground, in dense, shrubby thickets, although sometimes climbs to canopy of mid-storey trees at forest edge; and seldom associated with mixed-species flocks. Recorded as attending swarms of army ants (*Eciton burchelli*) in E Brazil, and seen to supplant *Pyrgilena leuconota* at one such swarm; generally follows ants only through dense understorey thickets at forest edge, then abandons them when ants move into more open areas in interior.

**Breeding.** In Brazil, breeds Oct-Jan in SE and, in NE (Pará), female feeding fledgling in Jun near Belém and nest-building in Nov near mouth of R Tapajós. Nest a small, deep cup loosely constructed from fine, well-interlaced filaments, those of outside much darker, almost black roots or fungus, sometimes decorated with green moss, internal ones yellowish and almost entirely shafts of herbs and fine flower peduncles, sometimes also with "horsehair", the whole attached by rim at 1.5-3 m in horizontal fork among foliage in thicket. Normal clutch 2 eggs, creamy to reddish-white, with irregular purplish, dark brown or reddish-brown spots, blotches and lines most dense at blunt end, almost no markings at pointed end.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Locally fairly common over much of its extensive range. This includes several protected areas, e.g. Tapajós and Tijuca National Parks, Cristalino State Park and Sooretama Biological Reserve, in Brazil, and Tambopata-Candamo Reserved Zone and Manu National Park and Biosphere Reserve, in Peru. Adapted to a variety of habitats, including highly disturbed woodland and second growth, rendering it of low vulnerability.

**Bibliography.** Cory & Hellmayr (1924), Estevão (1926), Euler (1868), Foster *et al.* (1994), Hilty & Brown (1986), Isler, M.L. *et al.* (1998), Isler, P.R. & Whitney (2002), Nehrkorn (1899), Novaes (1961c, 1973), Oates & Reid (1903), Oren & Parker (1997), Parker (2003a), Parker & Bailey (1991), Perry *et al.* (1997), Pinto (1953), Ridgely & Tudor (1994), Schönwetter & Meise (1967), Schubart *et al.* (1965), Schulenberg & Awbrey (1997a), Sick (1993, 1997), Snelhage (1935), Stotz (1990b), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Willis (1984d), Zimmer, J.T. (1933a), Zimmer, K.J. (2003a), Zimmer, K.J., Parker *et al.* (1997).

## 22. Rufous-winged Antshrike

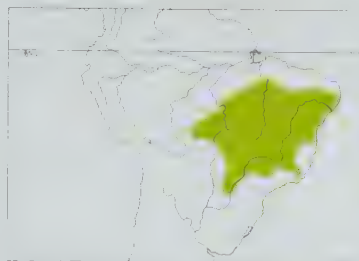
### *Thamnophilus torquatus*

**French:** Batará à ailes rousses **German:** Rostflügel-Ameisenwürger **Spanish:** Batará Alirrufo

**Taxonomy.** *Thamnophilus torquatus* Swainson, 1825, Urupé, Bahia, Brazil.

Belongs to the "*T. dolatus* group", which also includes *T. zarumae*, *T. multistriatus*, *T. temepunctatus*, *T. palliatus* and *T. ruficapillus*. Appears to form a superspecies with last of those, but syntopy is suspected in S of range in Brazil (extreme E Minas Gerais and NW Rio de Janeiro). Monotypic.

**Distribution.** E Brazil (S Pará and S Maranhão E to Pernambuco and S to WC Mato Grosso, Mato Grosso do Sul, São Paulo, W edge of Rio de Janeiro and coastal C Bahia), NE Bolivia (NE Santa Cruz) and NE Paraguay (Canendiyu).



**Descriptive notes.** 14 cm; 18-20 g. Male has black crown, grey side of head and upperparts, cinnamon-rufous wings and wing-coverts; graduated tail black, outer rectrices with complete white bars (appearing as spots from above); throat and underparts whitish, breast barred black. Distinguished from similar *T. ruficapillus* by black crown, paler overall plumage, smaller size. Female differs from male in rufous crown and tail, mottled whitish and grey head side, pale cinnamon-rufous upperparts, buff-tinged underparts, especially breast, flanks and crissum, breast unbarred or sometimes with faded band of dusky bars.

**Voice.** Loudsong a moderately long (e.g. 16 notes, 3-4 seconds) accelerating series of nasal notes, first one long and drawn out, followed by increasingly shorter notes, ending in longer downslurred note; similar to loudsong of *T. ruficapillus*, but immediately distinguished from that of *T. palliatus* by long initial note. Calls include querulous upslurred whistle, also a nasal note that becomes harsh, and a growl.

**Habitat.** Understorey of *cerrado* and adjacent semi-deciduous woodland, riparian thickets and brushy second growth; up to 1750 m, mostly below 1000 m. Often in regenerating pastures and plantations where shrubs interlacing and canopy height exceeds 2 m.

**Food and Feeding.** Little published. Feeds on variety of insects, including larval lepidopterans, grasshoppers (Acrididae), beetles (Coleoptera, including Curculionidae), ants (Formicidae) and other Hymenoptera, and larval Neuroptera; also other arthropods, such as spiders. Pairs or individuals forage mostly 0-2 m above ground, sometimes up to treetops, progressing by short hops, with pauses of 2-15 seconds to scan for prey. Perch-gleans prey from all sides of green leaves, stems and branches, with quick stabbing motions of the bill; sometimes makes short, jumping, upward-directed sallies to glean items from undersides of overhanging vegetation; also frequently drops to ground to pounce on prey spotted from above. Usually alone, but sometimes associated with mixed-species groups of other insectivores, including *Formicivora rufa* and White-eared Puffbird (*Nystalus chacuru*), Chequered Woodpecker (*Picoides mixtus*), Narrow-billed Woodcreeper (*Lepidocolaptes angustirostris*), Campo Flycatcher (*Suiriri suiriri affinis*) and Plain-crested Elaenia (*Elaenia cristata*).

**Breeding.** Nests found in Apr-Jun in E Brazil (13 in Alagoas, 1 in Bahia; details previously unpublished). Nest built by both sexes, cup-shaped, walls solidly woven from fine grass stalks, rootlets and black *Marasmius* fibres, sometimes with inflorescences, bits of moss and bark fibres (occasionally also fragments of wool or twine, even small balls of cotton) incorporated; for 6 nests average external diameter 9 cm, height 6-5 cm, internal diameter 7-5 cm, depth 5 cm, two weighed 5 g, one 10 g; suspended by rather broad strips of vegetation (e.g. bark) 2-5-3 cm long, 0-7-1-5 m above ground in fork of bush, often beside forest trail; one pair spent 13 days in building nest, then abandoned it and started another nest 20 m away. Normal clutch 2 eggs, one record of 3, white, numerous violaceous and brown spots and streaks (and a few russet and dark brown lines) over entire surface, more concentrated at blunt end (sometimes forming vague wreath); incubation by both sexes, at one nest male incubated for 70% and female for 30% of time, at another male sat continuously for 100 minutes in morning, incubation period at two nests 15 days; hatching naked, skin dark violet; chicks fed at same rate by both parents, with insects (e.g. adult and larval lepidopterans, small beetles), nestling period at one nest 10 days.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common, but somewhat locally distributed. This species' preferred habitats of *cerrado* and gallery forest are patchily distributed, and are among the most threatened in South America. It does, however, occur in several large protected areas, including Chapada dos Guimarães, Chapada Diamantina and Serra da Canastra National Parks, in Brazil, and Noel Kempff Mercado National Park, in Bolivia, and it appears capable of adapting to second-growth habitats, thus rendering it less sensitive to disturbance.

**Bibliography.** Bates *et al.* (1992), Capper, Clay, Madroño & Mazar Barnett (2001), Capper, Clay, Madroño, Mazar Barnett, Burfield *et al.* (2001), Coelho (1987), Cory & Hellmayr (1924), Euler (1900), Isler & Whitney (2002), Motta-Júnior (1990), Motta-Júnior & Vasconcello (1996), do Nascimento *et al.* (2000), Naumburg (1930), Novaes (1992), Parker (2003a), Ridgely & Tudor (1994), Schönwetter & Meise (1967), Sick (1955, 1993, 1997), da Silva & Oniki (1988), Stotz *et al.* (1996), Studer (2002), Zimmer (2003a).





PLATE 43

inches 3  
cm 8



## 23. Rufous-capped Antshrike

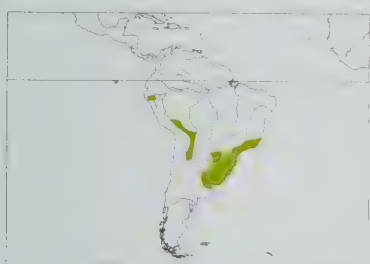
### *Thamnophilus ruficapillus*

**French:** Batara à tête rousse **German:** Rostscheitel-Ameisenwürger **Spanish:** Batará Pardo  
**Other common names:** Marcapata Antshrike (*marcapatae*)

**Taxonomy.** *Thamnophilus ruficapillus* Vieillot, 1816, no locality = Corrientes, Argentina. Belongs to the “*T. doliatus* group”, which also includes *T. zarumae*, *T. multistriatus*, *T. tenuipunctatus*, *T. palliatus* and *T. torquatus*. Appears to form a superspecies with last of those, but syntopy is suspected in S of range in Brazil (extreme E Minas Gerais and NW Rio de Janeiro). Five subspecies recognized.

#### Subspecies and Distribution.

*T. r. jaczewskii* Domaniewski, 1925 - N Peru (Cajamarca, Amazonas S of R Maraón, San Martín).  
*T. r. marcapatae* Hellmayr, 1912 - S Peru (Cuzco, Puno).  
*T. r. subfasciatus* P. L. Selater & Salvin, 1876 - NW Bolivia (La Paz, W Cochabamba).  
*T. r. cochabambae* (Chapman, 1921) - E Cochabamba and SW Santa Cruz S to NW Argentina (Jujuy, Salta, Tucumán).  
*T. r. ruficapillus* Vieillot, 1816 - E Paraguay and SE Brazil (S from E Minas Gerais and Espírito Santo) S to NE Argentina (Misiones, Corrientes, Entre Ríos, NE Buenos Aires) and Uruguay.



**Descriptive notes.** 15-17 cm; 21-24 g. Male nominate race has crown chestnut, side of head and throat pale buffy brown, mottled and faintly barred dusky brown; upperparts dark brown, wings rufous-brown; graduated tail brownish-black, tips and inner webs of outer feathers barred white; underparts white, tinged buff, narrow irregular black bars across breast and sides, buff flanks and crissum tinged olive. Distinguished from similar *T. torquatus* by chestnut crown, somewhat darker plumage, larger size. Female differs from male in cinnamon-brown crown, rufous-brown tail without white markings, only hint of barring across

breast. Race *jaczewskii* male has head side and throat grey and faintly barred, upperparts olive-tinged dark grey, wings chestnut, underparts barred white and black, flanks tinged olive, female olivaceous above, bright buff below, belly paler; *marcapatae* is similar to previous, but upperparts, side of head and flanks dark grey, throat more distinctly barred, black bars below heavier, female dark olive-grey above, strong reddish yellow-brown below with throat and belly paler, admixed grey on flanks; *subfasciatus* male very similar to *jaczewskii*, female resembles *marcapatae* but slightly paler, *cochabambae* male has head side and throat buffy white, edged and streaked light grey, upperparts mid-grey, tail more barred, buffy breast and sides barred black, belly buffish-white, flanks and crissum mixed light buff and grey, female is olivaceous above, whitish below, with buff tinge on breast and sides, olivaceous-buff tinge on flanks and crissum. **Voice.** Loudsong a moderately long (e.g. 13 notes, 3-3 seconds, nominate race) accelerating series of nasal notes, initial note long and drawn out, followed by increasingly shorter notes, ending in longer downslurred note, similar to that of *T. torquatus*; pace and number of notes may vary regionally (differences remain to be analysed). Calls include upslurred whistle, also loud raspy “chirr” upslurred at end, likened to sound of canvas being torn; calls may differ regionally.

**Habitat.** Understorey of montane evergreen forest-edge in Andes, also secondary scrub, regenerating clearings, and isolated thickets and patches of woodland in otherwise open country. At 1750-3050 m in Andes (*jaczewskii*, *marcapatae*, *subfasciatus*); *cochabambae* at 600-2700 m in Bolivia, descending lower in Argentina; and nominate race from sea-level to 2400 m, at higher elevations in N, lower in S. Found in the densest forest understorey in N Peru; farther S in Andes inhabits semi-humid forest and second growth, but also occurs in patches of dense shrubs and trees bordering watercourses in predominantly open areas of intermontane valleys. In N Argentina and extreme SE Brazil, at lower elevations, commonly in isolated thickets of shrubby vegetation and small trees (canopy less than 5 m) growing on slight rises in middle of grassy marshes; also in second growth, scrub, hedgerows, brush piles; not inside forest. Farther N, on mountain tops of SE Brazil, found in impenetrable thickets on windswept brushy grassland.

**Food and Feeding.** Little published. Feeds on various insects and other arthropods, including beetles (Curculionidae, Chrysomelidae), moths (Noctuidae), ants (Formicidae) and flies (Diptera). Apparently feeds not uncommonly on fruit (e.g. *Trema*) and mistletoe (*Rapanea*) in SE Brazil. Forages in pairs or singly, mostly 0-2 m above ground, occasionally to 7 m, progressing slowly by short hops separated by pauses of, on average, 2-4 seconds, frequently longer. Perch-gleans from all live leaf, stem and branch surfaces with quick stabbing motion of the bill; sometimes makes short, jumping, upward-directed sallies to take prey from undersides of overhanging vegetation; frequently drops from a low perch to pounce on prey on ground. In SE Brazil, often inspects and probes in bases of bromeliads and large *Cattleya* orchids, the capture of all but small items being followed by deliberate wiping of the bill on a branch.

**Breeding.** Oct-Dec (once in Feb) in Argentina and Oct-Nov in Brazil. Nest a cup with external diameter 10 cm, internal diameter 6 cm, height 6 cm, depth 5 cm, composed of irregular strips of straw, grasses and short, wrinkled fragments of club-rush (*Scirpus*), lined with very fine straw, rootlets and some horsehair, with some strands projecting from the bulk of the nest up to 11 cm, the whole decorated with bits of wool and generally straw-yellow in colour, suspended by rim from horizontal fork or parallel branches, to which bound by spider webs, 1-2 m above ground in bush or sapling (most often *Scutia* or *Celtis*); an unusual nest in Brazil was a deep cup (outside height 9 cm, inside depth 6 cm) attached to a vertical fork in such a way that the rim was free and the two branches held the entire length of the side wall, approximately like a flag on a pole. Normal clutch (known only for nominate race) 3 eggs, sometimes 2, whitish, with violet-brown and purplish-grey spots and sometimes lines most dense around large end. Brood parasitism by Shiny Cowbirds (*Molothrus bonariensis*) recorded in Argentina.

**Movements.** Most races presumed resident, but at least some individuals of nominate race may move N from S extremity of range in austral winter.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of its highly disjunct range. Occurs in several protected areas, including Itatiaia, Serra dos Órgãos and Aparados da Serra National Parks, in Brazil, and El Rey and Calilegua National Parks, Ingeniero Otamendi Reserve and Costanera Sur Ecological Reserve, in Argentina. Ability of most races to utilize shrubby thickets, forest edge and other forms of second growth renders them of low sensitivity to distur-

bance. In N Peru, race *jaczewskii* is rare and poorly known, and may possibly be threatened by forest destruction.

**Bibliography.** dos Anjos (2001a), Barrows (1884), Belton (1985), Bencke & Kindel (1999), Cory & Hellmayr (1924), Cuello & Gerzenstein (1962), Darrieu *et al.* (1988), Dumford (1877, 1878), Euler (1867, 1868), Ferreira de Vasconcelos & Melo-Júnior (2001), Fjeldså & Krahbe (1990), Fjeldså & Majer (1996), Fraga & Narosky (1985), Hartert & Venturi (1909), Ihering (1900), Isler & Whitney (2002), Lowen, Clay *et al.* (1997), Narosky & Yzurieta (1993), Parker (2003a), Pereyra (1938), Pineschi (1990), Ridgely & Tudor (1994), Schmitt *et al.* (1997), Schönwetter & Meise (1967), Schulenberg (1983), Schulenberg & Awbrey (1997b), Selater & Hudson (1888), Scott & Brooke (1985), Sick (1993, 1997), Stotz *et al.* (1996), Voss & Sander (1980), Wetmore (1926), Zimmer, J.T. (1933b), Zimmer, K.J. (2003a), Zotta (1936).

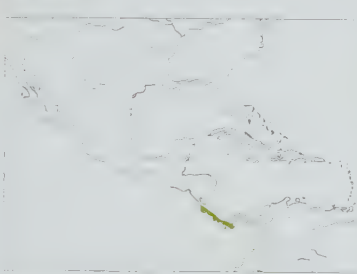
## 24. Black-hooded Antshrike

### *Thamnophilus bridgesi*

**French:** Batara capucin **German:** Kapuzenameisenwürger **Spanish:** Batará Negruzco  
**Other common names:** Bridges's Antshrike

**Taxonomy.** *Thamnophilus bridgesi* P. L. Selater, 1856, David, Chiriqui, Panama. Relationships uncertain. Monotypic.

**Distribution.** Pacific slope in Costa Rica (except extreme NW) and W Panama (Chiriqui, S Veraguas, Los Santos).



**Descriptive notes.** 16 cm; 26-27 g. Male is black, except for white interscapular patch, small white dots on wing-coverts, white tips on outer tail feathers, dark grey posterior underparts. Female has forehead, crown and side of head blackish-grey, narrowly streaked white, upperparts and wings very dark greyish-brown, anterior scapulars edged white, wing-coverts spotted white, tail blackish-brown, outer feathers spotted white; underparts olive, darker anteriorly, streaked white on throat, breast and belly. Juvenile is like female but browner, with larger spots, especially on wing-coverts; subadult male resembles adult but more brownish, and anterior underparts streaked white. **Voice.** Loudsong a moderately long (e.g. 18 notes, 2-5 seconds) series of abrupt, dry notes, accelerating and rising in pitch slightly at beginning and then constant in pitch and pace, ending with longer, downslurred, emphatic note; also a loud sharp note repeated 5-35 times at rate of c. 5 notes per second. Call an extended, complaining note, usually repeated 2-3 times.

**Habitat.** Understorey and mid-storey of evergreen forest, transitional semi-deciduous forest, taller second-growth woodland, and mangroves, from sea-level to 1100 m. In humid evergreen forest generally confined to shrubby thickets and vine tangles at borders (and adjacent second growth) and in light-gaps within the forest. In transitional and gallery forests frequently occupies interior, particularly in micro-habitats with abundant vines. Near the coast, also found in seasonally dry stands of mangroves where shrubby thickets present in understorey.

**Food and Feeding.** Little published. Feeds on variety of insects, particularly orthopterans such as crickets (Gryllidae), grasshoppers and katydids (Ensifera), also cockroaches (Blattodea), mantids (Mantidae), stick-insects (Phasmatidae), true bugs (Hemiptera, Homoptera), beetles (Coleoptera), and larvae of Lepidoptera; also other arthropods, such as spiders. Pairs or individuals forage mostly in vine tangles, from ground level to 15 m, moving even more sluggishly than most antshrikes, with short hops separated by lengthy pauses of up to 30 seconds to scan for prey. Reaches out, up or down, or lunges to glean prey from all leaf, stem, vine and branch surfaces with quick stabbing motions of the bill; routinely probes suspended dead leaves, often sitting astride larger leaves and probing and tearing vigorously with the bill. In drier forest habitats, also commonly forages on ground, where it probes in the litter, turning and tossing leaves with its bill, frequently jumping up to a low perch less than 1 m above ground to scan, before dropping back down. Often associated with mixed-species flocks. Occasionally follows army ants (*Eciton*) to feed on flushed arthropod prey.

**Breeding.** Feb-Sept in Costa Rica. Nest a roomy open cup of fine, dark rootlets and other filamentous fibres, bound with cobweb to its supports, and often decorated with bits of green moss on outside, suspended by rim from horizontal fork 0.6-3.6 m above ground among foliage at end of slender branch in dense vegetation. Normal clutch 2 eggs, dull white, with wreath of bright brown and pale lilac blotches and spots around large end, a few speckles elsewhere; incubation shared by both parents during day, by female at night, period 14-15 days; chick hatches without down; both parents feed nestlings.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in South Central American Pacific Slope EBA. Locally common within its tiny range. Occurs in a number of parks and reserves in Costa Rica, e.g. Carara Biological Reserve, Corcovado and Manuel Antonio National Parks, Golfo Dulce Forest Reserve, Wilson Botanical Garden. Although seemingly capable of persisting in disturbed habitats, it has gradually disappeared from much of its now deforested former range in Panama. Current parks and reserves in Costa Rica should, with continued protection, support an adequate population of this species.

**Bibliography.** Aldrich & Bole (1937), Carriker (1910), Cherrie (1893, 1895), Cory & Hellmayr (1924), Foster (1975), Isler & Whitney (2002), Ridgely & Gwynne (1989), Ridgway (1911), Schönwetter & Meise (1967), Skutch (1969c), Slud (1964), Stattersfield *et al.* (1998), Stiles & Skutch (1989), Stotz *et al.* (1996), Swartz (2001), Wetmore (1972), Willis (1984d), Zimmer (2003a).

## 25. Black Antshrike

### *Thamnophilus nigriceps*

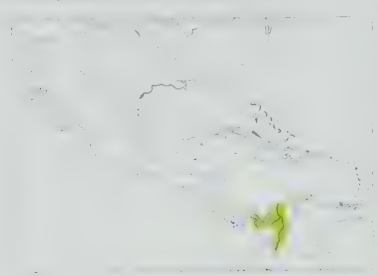
**French:** Batara noir **German:** Nördlicher Schwarzameisenwürger **Spanish:** Batará Negro

**Taxonomy.** *Thamnophilus nigriceps* P. L. Selater, 1869, “Bogotá” trade skin; probably = vicinity of Barranquilla, Atlántico, Colombia.

Forms a superspecies with *T. praecox*. Described race *magdalenae* (N Colombia) appears to represent the end point of a cline. Monotypic.



**Distribution.** E Panama (E Panamá, Darién) and N Colombia (N Chocó E to W La Guajira, and S in Magdalena Valley to Tolima).



**Descriptive notes.** 16 cm; 23–24 g. Male is entirely black, except for dark grey flanks and white underwing-coverts and edges of flight-feathers below. Female has upperparts, wings and tail rufous-brown, head, throat and upper breast blackish-grey, becoming grey on lower breast and belly, buff on posterior underparts; head to belly with buff-white streaks varying in width individually as well as regionally, proportion of females with streaking narrow increases clinally from N to S, reaching extreme in S Magdalena Valley (“*magdalenae*”, streaks restricted to feather shafts). Subadult male is like adult female but with pale edgings on

wing-coverts, black barring on posterior underparts; subadult female has broader streaking on anterior underparts. **Voice.** Loudsong a moderately long (e.g. 12 notes, 2–3 seconds), slightly accelerating, evenly pitched series of somewhat musical yet emphatic notes; also delivers similar notes in a more rapid, uncountable series introduced by firmly accented note. Calls include hollow, nasal note sometimes repeated, and nasal growl.

**Habitat.** Shrubby understorey and regenerating clearings of humid evergreen forest, less often lighter woodland and taller second growth, to 600 m. Particularly favours dense, viny, thorny or *Heliconia* thickets, both at forest edge and in interior.

**Food and Feeding.** Little recorded. Assumed to feed on insects and arthropods. Pairs or individuals forage in shrubby, viny thickets, mainly 1–2 m above ground but sometimes to 7 m, progressing by short hops, with pauses of up to several seconds to scan for prey. Jerks tail upwards when alarmed.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Poorly known. Occurs in Los Katios and Tayrona National Parks, in Colombia. Apparently locally fairly common, but the small geographic range of this species justifies better clarification of its true status and conservation needs. Perhaps better categorized as Data-deficient.

**Bibliography.** Cory & Hellmayr (1924), Darlington (1931), Dugand (1940), Griscom (1927b), Hilty & Brown (1986), Isler & Whitney (2002), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Rodríguez (1982), Stotz *et al.* (1996), Todd & Carriker (1922b), Wetmore (1972), Willis (1988b).

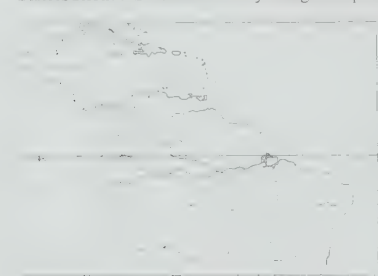
## 26. Cocha Antshrike

### *Thamnophilus praecox*

**French:** Batara du Cocha **German:** Südlicher Schwarzzeisenwürger **Spanish:** Batará de Cocha

**Taxonomy.** *Thamnophilus praecox* J. T. Zimmer, 1937, mouth of Lagarto Cocha, Napo, Ecuador. Forms a superspecies with *T. nigricaps*. Monotypic.

**Distribution.** NE Ecuador locally along R Napo and its tributaries (in E Napo and E Sucumbios).



**Descriptive notes.** 16 cm. Male is entirely black except for white underwing-coverts. Female has head, throat and upper breast black, throat sometimes faintly streaked white along shafts, remaining plumage cinnamon-rufous, underparts slightly paler. **Voice.** Loudsong a rapidly delivered (too fast to count), moderately long (e.g. 18 notes, 2–5 seconds) series of deep, hollow, although somewhat liquid notes, constant in pitch, intensity and pace; also delivers similar notes in a more rapid series in which first note lengthened and firmly accented. Call is mellow and often given in doublets.

**Habitat.** Understorey of lowland, seasonally flooded, evergreen forest, at 200–250 m. Apparently confined to black-water drainages, where it inhabits dense shrubby streamside thickets and tangles, often containing *Cecropia* and *Heliconia*.

**Food and Feeding.** Little recorded. Assumed to feed primarily on insects and other arthropods. Individuals or pairs forage low in dense thickets along black-water streams, progressing by short hops, with pauses of up to several seconds to scan for prey. One individual was seen to pick a large caterpillar off a leaf and take this to the ground to beat it, before swallowing.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species; present in Upper Amazon-Napo Lowlands EBA. Long known only from a single female specimen, this species was rediscovered in 1990 at Imuya Cocha, near the type locality. Subsequently found to be fairly common in that area, with smaller numbers present S of R Aguarico at Zaneudo Cocha and near R Pacuyacu, at La Selva and Sacha Lodges, and S of R Napo near Pompeya. Seemingly a low-density species confined to black-water drainages, but with no immediate threats. Habitat degradation resulting from expansion of petroleum exploration in the Napo basin could represent a future threat.

**Bibliography.** Behrstock (2003), Budney (2003), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Isler & Whitney (2002), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Zimmer (1937).

## 27. Blackish-grey Antshrike

### *Thamnophilus nigrocinereus*

**French.** Batara demi-deuil **German.** Schwarzgrauer Ameisenwürger **Spanish.** Batará Ceniciento

**Other common names:** Grey Antshrike

**Taxonomy.** *Thamnophilus nigrocinereus* P. L. Sclater, 1855, Rio Tocantins, Pará, Brazil. Forms a superspecies with *T. cryptoleucus* and formerly considered conspecific. Races distinctive in plumage; furthermore, differences among them in calls, and also the possibility that Amazonian races may meet each other without intergradation, require study. Five subspecies currently recognized.

**Subspecies and Distribution.**

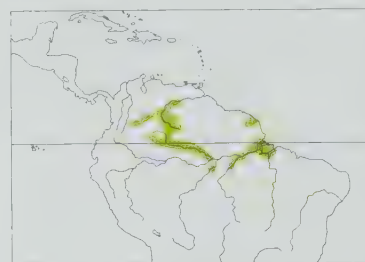
*T. n. cinereoniger* Pelzeln, 1868 - NE Colombia, SW Venezuela and NW Amazonian Brazil (drainages of, respectively, R Meta, upper R Orinoco, and lower R Uaupés and R Negro).

*T. n. tschudii* Pelzeln, 1868 - WC Brazil (E Amazonas along lower R Madeira).

*T. n. huberi* Sneath, 1907 - EC Brazil (W Pará along lower R Tapajós).

*T. n. nigrocinereus* P. L. Sclater, 1855 - E Brazil from near mouth of R Tapajós along lower R Amazon and surrounding rivers E to Amapá and islands in estuary.

*T. n. kulczynskii* (Domaniewski & Stolzmann, 1922) - E French Guiana and adjacent Brazil (extreme N Amapá).



**Descriptive notes.** 16–17 cm; 28–32 g. Male nominate race is blackish-grey, blackest on head, throat and back, palest on rump and belly, tinged brownish on wings; interscapular patch white, scapulars, wing-coverts and flight-feathers edged white, tail tipped white. Female has crown and side of head blackish-grey, upperparts dark grey with reddish-brown tinge, wings and tail brown, underparts reddish-brown, darkest across breast. Race *huberi* differs from nominate in being greyer except on crown, crissum tipped white, female in having back and tail rufous-brown, underparts cinnamon-rufous; *tschudii* has black upperparts,

blackish underparts, female is chestnut-brown above, throat sooty brownish-black; *cinereoniger* paler overall, with grey upperparts, mixed black on centre of back, grey below darker anteriorly, palest on belly, crissum tipped white, female with crown and side of head grey, upperparts dark rufous-brown, wing-coverts edged pale rufous, underparts and underwing-coverts orange-rufous, subadult male like female except wing-coverts narrowly edged white and underparts mixed grey and cinnamon-rufous; *kulczynskii* female has head blackish, upperparts olive-brown, posterior underparts greyish. **Voice.** Loudsong of male a strongly accelerating, slowly delivered (e.g. 8 notes in 2–4 seconds) series of low-pitched, mellow, punchy notes, either slightly descending (e.g. nominate race) or nearly even in pitch (e.g. *cinereoniger*); female loudsong usually begins at higher pitch but descends more noticeably. Call of *cinereoniger* nasal and muffled, and often doubled, nominate race similar but rising; also a trill or rattle introduced by one or two longer emphatic notes.

**Habitat.** Understorey and mid-storey of seasonally flooded evergreen forest, gallery forest, and scrubby savanna woodland; locally in shrubby borders of humid upland forest, and in mangroves. In most of Amazonia, lives on river islands and borders in dense understorey of seasonally flooded *várzea* and *igapó* forest, in tall thickets at river edge, and at nearby edges of clearings. On large islands at mouth of Amazon (*nigrocinereus*) typically found in dense forest stands on high ground surrounded by seasonally flooded *campos*. In Colombia and Venezuela (*cinereoniger*) most common in seasonally flooded, stunted (4–10 m), dense savanna woodland on white-sand soils; also in gallery forest. In French Guiana (*kulczynskii*) a characteristic bird of young and middle-stage stands of coastal mangroves, with highest densities in mixed stands of white mangrove (*Avicennia germinans*) and red mangrove (*Rhizophora*), but also occurs in densely vegetated river edges away from coast.

**Food and Feeding.** Feeds on variety of insects and other arthropods. Most available data are for race *cinereoniger*: on river islands in R Negro observed to take crickets (Gryllidae), cockroaches (Blattodea), and moths and caterpillars (Lepidoptera); stomach contents included a 7-cm stick-insect (Phasmatodea), true bugs (Hemiptera), beetles (Coleoptera) and hymenopterans. Pairs or individuals (of *cinereoniger*) forage at 0–3 m, but mostly within 0–3 m of ground, perching on low branches, stems or aerial roots, progressing by hops and short flights, with intervening pauses of 1–10 seconds to scan for prey. Clings to perches with feet, reaching down to seize prey from leaf litter; frequently drops to ground to pounce on prey, before jumping back up to a low perch; also commonly makes short, upward-directed jumps to glean prey from undersides of overhanging green leaves. Sometimes loosely associated with understorey mixed-species flocks. In French Guiana, race *kulczynskii* forages in middle stratum (3–10 m up) of mangrove forest, rarely in canopy, but sometimes seeks insects on wet or inundated ground by hanging on to roots of mangroves and large ferns.

**Breeding.** Little recorded; breeding reported in Mar on upper R Orinoco, Venezuela; other data available only from French Guiana (*kulczynskii*), to which following details refer. Five nests recorded, all in Aug–Sept. Nest built by both sexes, a deep cup primarily of woven fibres of the slender liana *Rhabadenia biflora* and other dried herbaceous material, additionally bound with webbing from spider egg sacs, attached by rim 1–2 m above ground in horizontal peripheral fork of a small shrub, most commonly grey mangrove (*Laguncularia racemosa*). Clutch 2 eggs, creamy white to reddish-white with large, angular violet-brown spots, marks more extended and more abundant at larger end; no information on incubation and nesting periods. All five nests lost to predation before young fledged; arboreal snakes thought to be main predators.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Locally fairly common, including in a number of parks and biological reserves. Fairly common in, for example, Jau and Tapajós National Parks and Rio Negro State Park, in Brazil, and Alto Orinoco-Casiquiare Biosphere Reserve and Yapacana National Park, in Venezuela, as well as in numerous indigenous reserved zones in SE Colombia, SW Venezuela and N Brazil. Some Amazonian forms appear to tolerate the proximity of humans and inhabit shrubby surrounding clearings on river islands.

**Bibliography.** Cory & Hellmayr (1924), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Meyer de Schauensee & Phelps (1978), Oren & Parker (1997), Reynaud (1998), Ridgely & Tudor (1994), Sick (1993), Sneath (1913), Stotz *et al.* (1996), Tostain (1986a, 1986b), Tostain *et al.* (1992), Zimmer, J.T. (1933a), Zimmer, K.J. (1997, 2003a), Zimmer, K.J. & Hilty (1997).









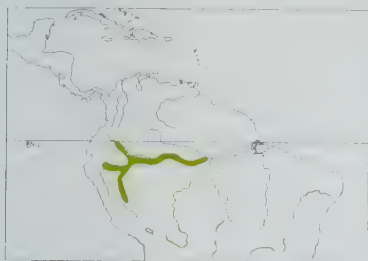


## 28. Castelnau's Antshrike

### *Thamnophilus cryptoleucus*

**French:** Batare de Castelnau **German:** Flussufer-Ameisenwürger **Spanish:** Batará de Castelnau

**Taxonomy.** *Myrmelastes cryptoleucus* Menegaux and Hellmayr, 1906, Pebas, Loreto, Peru. Forms a superspecies with *T. nigrocinereus* and formerly considered conspecific. Monotypic. **Distribution.** NE Ecuador and N Peru (locally along R Napo, R Marañón, R Santiago and R Ucayali) E along R Amazon in W Brazil (E to vicinity of mouth of R Negro).



**Descriptive notes.** 16-17 cm; 30-35 g. Male is black, with white interscapular patch, white tips or edges on scapulars, wing-coverts and bend of wing, sometimes very small white tips on outer rectrices, dark grey flanks and posterior underparts, white underwing-coverts. Female lacks visible white wing edgings. Subadult resembles female but browner. **Voice.** Rapidly accelerating series of evenly pitched, emphatic, complex notes (e.g. 14 notes, 2-2 seconds) with complaining quality; individuals often vary the number of notes in successive songs. Calls include loud, abrupt, nasal note; same note also introduces a trill or rattle

of highly variable length; other calls include longer, somewhat muffled, complaining note and a growl.

**Habitat.** Understorey and mid-storey of seasonally flooded evergreen forest and tall second-growth woodland on islands in white-water rivers. Chiefly on middle-aged and older islands, but also found in riverbank forest wherever the force of the current maintains an appropriate level of vegetation succession. Inhabits dense undergrowth and mid-storey of *Cecropia* forest. Also found at edge of older forest in understorey composed of saplings mixed with cane and *Heliconia*.

**Food and Feeding.** Little published. Feeds on various insects and other arthropods; visual observations have identified large and small caterpillars. Pairs or individuals forage primarily 1-3 m above ground, occasionally to 6 m, rarely to 9 m, in *Cecropia*-dominated woodland, progressing slowly by short hops separated by scanning pauses of up to several seconds. Reaches out, up and down, or lunges to glean prey from all sides of green leaves, stems and branches, occasionally from dead-leaf clusters; employs quick stabbing motions of the bill; also regularly makes short sallies to pick prey from undersides of overhanging vegetation. Seldom associates with mixed-species flocks.

**Breeding.** Nothing known.

**Movements.** Presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of its narrow, linear distribution. Total population size, like that of most obligate river-island birds, is probably relatively small; further, because of the dynamic nature of river-island habitats, continued existence of these birds is dependent on perpetual formation of new islands. Few existing parks or reserves include extensive river-island habitats within their boundaries, leaving habitat specialists such as this antshrike vulnerable to any major changes in water flow in the Amazon and its major tributaries; such changes could arise from damming, or from increased flooding and erosion resulting from deforestation.

**Bibliography.** Isler & Whitney (2002), Parker (2003a), Remsen & Parker (1983, 1984), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rosenberg, G.H. (1985, 1990), Russell & Lamm (1978), Sick (1993), Stotz *et al.* (1996), Zimmer, J.T. (1933a), Zimmer, K.J. (1997).

## 29. White-shouldered Antshrike

### *Thamnophilus aethiops*

**French:** Batare à épaulettes blanches **Spanish:** Batará Hombroblanco  
**German:** Perlshulter-Ameisenwürger

**Taxonomy.** *Thamnophilus aethiops* P. L. Slater, 1858, Rio Napo, Napo, Ecuador.

Forms a superspecies with *T. unicolor*. A number of diagnosable races, geographically separated by Amazonian rivers, may be full species; molecular and other analyses, including of vocalizations, as well as investigation of possible intergradation at headwaters of rivers, are needed. Races *juruanus* and *kapouni* appear to intergrade. Ten subspecies recognized.

**Subspecies and Distribution.**

*T. a. wetmorei* Meyer de Schauensee, 1945 - foothill region in SE Colombia (W Meta S to E Cauca and W Putumayo).

*T. a. aethiops* P. L. Slater, 1858 - foothill region in E Ecuador and N Peru (N of R Marañón).

*T. a. polionotus* Pelzeln, 1868 - S Venezuela (Amazonas, SE Bolívar), extreme E Colombia (E Guainía, E Vaupés), and NW Brazil (N Roraima, and R Negro in upper drainage and on W bank of lower stretches S to R Solimões).

*T. a. kapouni* Seilern, 1913 - E Peru (S of R Marañón and R Amazon), extreme W Brazil (SW Amazonas E to R Jurúá) and N Bolivia (Pando S to La Paz and Cochabamba).

*T. a. juruanus* H. von Ihering, 1905 - SW Amazonian Brazil between R Jurúá and R Purus.

*T. a. injunctus* J. T. Zimmer, 1933 - Amazonian Brazil between R Purus and R Madeira.

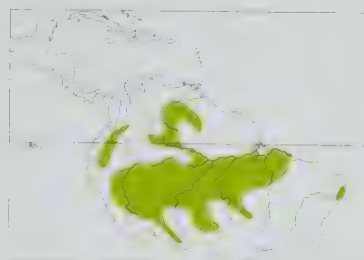
*T. a. punctuliger* Pelzeln, 1868 - Amazonian Brazil between R Madeira and R Tapajós (S to Rondônia and NW Mato Grosso) and extreme NE Bolivia (NE Santa Cruz).

*T. a. atriceps* Todd, 1927 - Amazonia in S Pará & NE Mato Grosso (between R Tapajós & R Tocantins).

*T. a. incertus* Pelzeln, 1868 - Pará S of R Amazon (E of R Tocantins) and NW Maranhão.

*T. a. distans* Pinto, 1954 - NE Brazil (coastal Pernambuco and Alagoas).

**Descriptive notes.** 15-17 cm; 23-30 g. Male nominate race is black, except for a few small whitish spots on lesser wing-coverts and bend of wing, and blackish-grey posterior underparts. Female is deep reddish-brown. Subadult resembles female, but with pale spots on wing-coverts. Races differ mainly in overall darkness, most paler than nominate, degree of spotting on wing-coverts, contrast below: *wetmorei* is blackish-grey above, small white spots also on greater and median wing-coverts, uniform grey below; *polionotus* differs from last in slightly less blackish upperparts, small white spots on outer tail, female with rufous crown, yellowish red-brown above, reddish yellow-brown underparts becoming



ing paler posteriorly; *kapouni* is slightly darker than last, no spots on greater coverts, breast slightly darker than belly; *juruanus* is less dark above than previous; *injunctus* has darker back than last, also white spots on greater and median coverts; *punctuliger* differs from last in slightly paler back, small white tips on outer rectrices, white interscapular patch, breast darker than belly, both sexes with pale spots on wing-coverts; *atriceps* also has breast darker than belly, spots only on lesser coverts; *incertus* is palest, crown grey, no spots on greater coverts, light grey below, breast slightly darker, female mostly pale rufous with white belly; *distans* is

darker than previous, white spots on greater and median wing-coverts. **Voice.** Male loudsong a short and slowly paced (e.g. 6 notes, 2-2 seconds) series of low-pitched, complaining notes delivered at steady pace and even pitch and intensity; female song similar but typically slightly higher-pitched, sounding more complaining. Common call abrupt throaty "cuck", often repeated in long sequences, and sometimes interspersed with longer calls; longer calls include caws (sometimes long and downslurred), nasal twangs, long and short growls, and single notes of loudsong. Possibility of geographical differences in vocalizations requires investigation.

**Habitat.** Understorey of lowland evergreen forest, mostly below 700 m, occasionally to 1150 m; to c. 2000 m in Andes (*aethiops*, *wetmorei*). Typically in low tangled vegetation at overgrown light-gaps (especially old treefall sites) and along streams within upland and transitional forest, often in thick stands of *Heliconia*. Locally, e.g. Alta Floresta region (Mato Grosso, Brazil), associated with dense stands of bamboo (*Guadua*) within *terra firme* or transitional forest. Also sometimes found in thick undergrowth at edge of extensive primary forest.

**Food and Feeding.** Little published. Feeds on variety of insects and arthropods. Pairs or individuals forage mostly 1-5 m above ground in dense understorey thickets, progressing by short hops, with intervening pauses of 1-10 seconds or more to scan for prey, peering in all directions. Often jumps to new perch before reaching out, up or down, or lunging to glean arthropods from surfaces of leaves (mostly undersides), stems, vines and branches with quick stabbing motions of the bill; occasionally makes awkward short sallies, flutters into dead-leaf clusters, or drops to ground to rummage among litter. In most parts of range forages independently, but in E Ecuador (*aethiops*) often accompanies mixed-species flocks that are largely restricted to vine tangles; in Mato Grosso (*atriceps*), routinely forages to heights of 8 m in large stands of bamboo, and often accompanies mixed-species understorey flocks. One published record of pair in Brazil following an army-ant (*Eciton burchelli*) swarm as it passed through a treefall zone: the birds clung to low, inclined or vertical saplings above swarm, then abandoned it before the ants entered the open forest understorey.

**Breeding.** Little recorded. In Brazil, single nests found in Oct, Nov and Feb (*incertus*), Jul (*punctuliger*) and Sept (*polionotus*), female with egg in oviduct in Sept in NW Mato Grosso (*punctuliger*), and fledglings following adults near Belém (Pará) in Jun-Oct. Nest an open deep cup, constructed of tightly woven fine roots and grass stems, sometimes decorated on outside with fresh mosses and decomposing leaves, suspended by rim within 2-5 m of ground in horizontal fork of slender branch. Normal clutch 2 eggs, white, with dark reddish, chocolate-brown or grey spots and lines larger and more densely distributed at large end; both sexes share incubation duties during day, both also feed nestlings; no information on duration of incubation and nestling periods.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Generally uncommon throughout its extensive range. This includes numerous large parks and biological reserves, examples being Jaú and Tapajós National Parks and Cristalino State Park, in Brazil, Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, and Caura Forest Reserve, Alto Orinoco-Casiquiare Biosphere Reserve and Yapacana National Park, in Venezuela; also a number of indigenous reserved zones that contain vast expanses of intact habitat. An exception is NE Brazil, where race *distans* appears to be highly threatened owing to the almost complete destruction of lowland evergreen forest in Alagoas and Pernambuco, in the wake of a burgeoning sugar-cane industry in the past few decades. Efforts should be made to preserve any intact lowland forest patches in this region, and censuses are needed in order to determine current population levels of *distans*.

**Bibliography.** Alverson, Moskovits & Shopland (2000), Alverson, Rodriguez & Moskovits (2001), Cory & Hellmayr (1924), English (1998), Foster *et al.* (1994), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Meyer de Schauensee & Phelps (1978), Noxas (1970), O'Neill & Pearson (1974), Oniki & Willis (1983b), Oren & Parker (1997), Parker (2003a), Parker & Bailey (1991), Peixoto Velho (1932), Pinto (1953), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schönewetter & Meise (1967), Schultenberger & Awbrey (1997a), Servat (1996), Sick (1993), Snethlage (1935), Stotz *et al.* (1996), Terborgh *et al.* (1990), Willis (1984d), Zimmer, J.T. (1933a), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997), Zimmer, K.J., Parker *et al.* (1997).

## 30. Uniform Antshrike

### *Thamnophilus unicolor*

**French:** Batare unicolore **German:** Einfarbameisenwürger **Spanish:** Batará Unicolor

**Taxonomy.** *Dysithamnus unicolor* P. L. Slater, 1859, Pallatanga, Chimborazo, Ecuador.

Forms a superspecies with *T. aethiops*. Re-examination of races needed; nominate and *grandior* possibly intergrade in SW Colombia (Nariño); original description of male *caudatus* may have been based on subadult specimen. Three subspecies recognized.

**Subspecies and Distribution.**

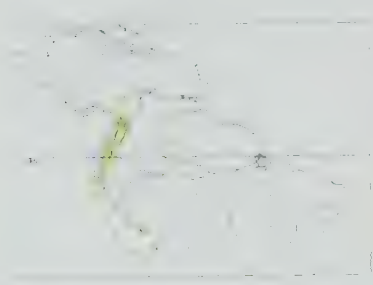
*T. u. grandior* Hellmayr, 1924 - Colombia (locally on all Andean slopes) and E slope in Ecuador and N Peru (S to N San Martín).

*T. u. unicolor* (P. L. Slater, 1859) - Pacific slope in Ecuador.

*T. u. caudatus* Carraker, 1933 - E Andean slope in C Peru (S San Martín S, locally, to Cuzco).

**Descriptive notes.** 14-16 cm; 20-24 g. Male is uniform blackish-grey; rarely, small white tips on outer rectrices; iris light grey or grey. Female has rufous crown, grey head side, lores and chin; upperparts, wings and tail yellowish red-brown, underparts paler and more ochraceous than above. Subadult is like female, but with buffy tips to greater wing-coverts. Race *grandior* has longer





tail than nominate, male outer rectrices with white tips; *caudatus* male probably not diagnosably different from previous, but female is darker and more rufous. **VOICE.** Male loudsong a short and slow-paced (e.g. 6 notes, 2-4 seconds) series of low-pitched, complaining notes at steady pace and even pitch, first note typically sounding slightly more intense; female song similar, but typically starts at slightly higher pitch and rises slightly. Calls include a low-pitched, raspy series of 3-4 notes, first longer; a rattle that begins with distinct, sharp bark; also long downslurred note, and raspy growl.

**Habitat.** Understorey of evergreen forest, primarily at 1200-2300 m, occasionally to 600 m and to 2900 m, in regions often drenched in fog. Mostly in dense, wet undergrowth, both within forest, especially at light-gaps, and at borders.

**Food and Feeding.** Little published. Feeds primarily on insects and other arthropods, but stomach contents also contained seeds. Forages in pairs or singly, mostly at 1-3 m, sometimes to 8 m, in shrubby forest borders and openings, crowns of understorey saplings and dense stands of bamboo; progresses by short hops, separated by pauses of up to several seconds to several minutes to scan for prey. Reaches out, up or down, or lunges to glean arthropods from all leaf, stem, vine and branch surfaces with quick stabbing motions of the bill; also commonly probes at bamboo nodes and bases of spines for concealed arthropods. Often perches on vertical stems. At times probes dead-leaf clusters or, rarely, sally-gleans. Occasionally joins understorey mixed-species flocks of insectivores and groups of ant-following birds, but more often alone.

**Breeding.** No previously published information. Nest (from photograph) a deep cup of fibres, with outer layer of green vegetation, possibly moss, hanging below cup. Eggs creamy white with numerous large blotches and small spots of brownish-purple, lavender or red.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Poorly known; considered uncommon to locally fairly common throughout its range. In Colombia, occurs in La Planada Nature Reserve and along the Cali-Buenaventura road; observed at Buenaventura (Piñas), and on the Nono-Mindo Road and at Mindo, in Ecuador; also recorded at Abra Patricia, in Peru. No immediate threats, although all species restricted to middle-elevation montane evergreen forest of N & C Andes are recognized as being generally at risk, owing primarily to extensive deforestation for agriculture.

**Bibliography.** Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hilty (1974, 1997), Hilty & Brown (1986), Isler & Whitney (2002), Miller (1963), Oates & Reid (1903), Olivares (1969), Parker (2003a), Parker & Carr (1992), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robles (2003), Schulenberg & Awbrey (1997a), Sclater & Salvin (1879), Stotz *et al.* (1996), Whitney (2003a), Zimmer, J.T. (1933a), Zimmer, K.J. (2003a).

## 31. Plain-winged Antshrike

### *Thamnophilus schistaceus*

**French:** Batara à ailes unies **German:** Schiefergrauer Ameisenwürger **Spanish:** Batará Alillano  
**Other common names:** Black-capped Antshrike

**Taxonomy.** *Thamnophilus schistaceus* d'Orbigny, 1837, Cochabamba, Bolivia.

Closely related to *T. murinus*. Proposed races *dubius* (E Peru), which represents an intermediate plumage in a broad cline, and *inornatus* (C Brazil), which represents the end of a cline and intergrades broadly with nominate, are synonymized with nominate. Race *heterogynus* may be specifically distinct. Three subspecies currently recognized.

#### **Subspecies and Distribution.**

*T. s. heterogynus* (Hellmayr, 1907) - extreme E Colombia (E Vaupés, presumably this race) and WC Amazonian Brazil (lower R Japurá, middle R Jaú, and both banks of R Solimões from R Juruá and lower and middle R Purus E to R Madeira).

*T. s. capitalis* P. L. Sclater, 1858 - SE Colombia (E base of Andes S from Meta), E Ecuador and NE Peru (N of R Marañón and R Amazon).

*T. s. schistaceus* d'Orbigny, 1837 - EC & SE Peru (S of R Marañón and R Amazon), S Amazonian Brazil (S of lower R Juruá and middle R Purus, and E from R Madeira to R Tocantins, S to Acre, Rondônia, N & W Mato Grosso and S Pará) and N Bolivia (S to C Santa Cruz).

**Descriptive notes.** 13-14 cm; 19-21 g. Male is grey, slightly darker on upperparts; wings and wing-coverts slightly brownish, edged grey; plumage darker in W ("*dubius*"), paler with whitish throat and belly in E ("*inornatus*"); iris reddish-brown. Female has crown rufous, upperparts yellowish olive-brown, underparts light olive-brown; as with male, darker in W and paler in E. Subadult is similar to adult female, but underparts variably cinnamon-tawny, olive-yellow or pale drab brown, yellow on sides and crissum. Race *capitalis* male has crown black; *heterogynus* female has upperparts rufous-brown, underparts rich

ochraceous. **VOICE.** Loudsong a slightly accelerating series of similar notes at same pitch, ending in sharply downslurred note that "falls off" to a lower pitch; number of notes variably 5-15, pace also varies. Differences somewhat regional, *heterogynus* differs in having notes of more abrupt quality, delivered faster than most, first note at slightly lower pitch; softsong a series of soft "pip" notes. Calls include long, slightly downslurred, somewhat plaintive note, often repeated in long series, also soft nasal note, quiet whistled note, and short growls given rapidly in alarm.

**Habitat.** Mid-storey of upland and seasonally flooded lowland evergreen forest, to 1100 m. Appears to prefer seasonally flooded forest in regions where sympatric with *T. murinus*. Chiefly in forest interior, but sometimes in dense vegetation at forest edge or in adjacent second growth.

**Food and Feeding.** Little published. Feeds on variety of insects and arthropods. Pairs or individuals forage mostly at 5-10 m, occasionally lower, or to 30 m above ground, particularly in woody vine tangles near trunks and in interior portions of middle-storey trees; sits fairly upright and peers about (mostly upwards) for several seconds or more between perch changes. Typically, moves quickly from tree to tree through home range, but also remains in same dense tangle for some time. Primarily sally-gleans, also hover-gleans, for distances of 0-1-2 m to obtain items from undersides of overhanging green leaves, quite often fluttering down to lower perch to manipulate and con-

## Family THAMNOPHILIDAE (TYPICAL ANTbirds)

### SPECIES ACCOUNTS

sume prey; also perch-gleans from leaf, stem, vine and branch surfaces with quick, stabbing motions of the bill. Occasionally explores clusters of dead leaves. Despite published statements to the contrary, routinely joins mixed-species understorey and mid-level flocks that move through its home range, although is not a permanent flock-member. One published record of ant-following from Brazil (Pará): an individual attended a swarm of *Eciton burchelli* for a few minutes, perched at 0.4 m, sallied to ground for flushed arthropod prey.

**Breeding.** Little recorded. Two nest descriptions from Brazil, in Feb and Oct, and two from Peru, in Mar and Sept. Nest a shallow cup constructed of coarse plant fibres, dried leaves, roots and stems, without finer lining, variously covered on outside with green moss, lichens or fungus-whitened twigs, suspended by rim within 2 m of ground in horizontal fork of slender branches among foliage, once with cluster of leaves hung over the top within 3 cm of rim. Normal clutch 2 eggs, creamy white, mottled and blotched with dark brown and pale lavender, the brown marks crowded around larger end; incubation by both sexes during day; no information on incubation and nestling periods.

**Movements.** Presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout its extensive range. This includes vast areas of intact, protected habitat, e.g. Yasuni National Park, in Ecuador, Tambopata-Candamo Reserved Zone and Manu National Park and Biosphere Reserve, in Peru, Jaú and Tapajós National Parks and Cristalino State Park, in Brazil, and Noel Kempf Mercado National Park, in Bolivia.

**Bibliography.** Álvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Cory & Hellmayr (1924), English (1998), Hellmayr (1910), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, M.L. *et al.* (1998), Isler, P.R. & Whitney (2002), Killen & Schulenberg (1998), Munn (1985), O'Neill & Pearson (1974), Olivares (1964a), Oren & Parker (1997), Parker (2003a), Parker & Bailey (1991), Remsen & Parker (1984), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Rosenberg (2003), Schulenberg (1983, 2003), Siek (1993), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Terborgh *et al.* (1990), Whittaker (2003a), Willis (1984d), Zimmer, J.T. (1930, 1933b), Zimmer, K.J. (2003a).

## 32. Mouse-coloured Antshrike

### *Thamnophilus murinus*

**French:** Batara souris **German:** Braunflügel-Ameisenwürger **Spanish:** Batará Murino

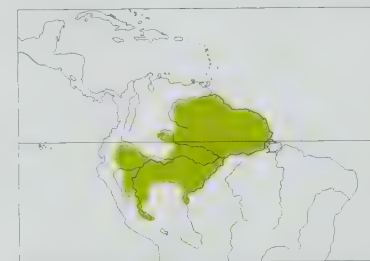
**Taxonomy.** *Thamnophilus murinus* P. L. Sclater and Salvin, 1868, Manaus, Amazonas, Brazil. Closely related to *T. schistaceus*. Race *cayennensis* possibly represents the extreme of a cline of plumage variation of nominate race; further study required. Three subspecies currently recognized.

#### **Subspecies and Distribution.**

*T. m. cayennensis* Todd, 1927 - French Guiana and NE Amazonian Brazil (Amapá, N Pará).

*T. m. murinus* P. L. Sclater & Salvin, 1868 - S Venezuela (Amazonas, Bolívar), Guyana, Surinam, extreme EC Colombia (E Guiana, E Vaupés) and Brazil N of R Amazon (from both banks of upper R Negro E to at least NE Amazonas).

*T. m. canipennis* Todd, 1927 - E Ecuador, E Peru (S to Ucayali and along base of Andes to NW Madre de Dios), extreme SE Colombia (Amazonas), W Brazil (E to R Japurá and, S of R Amazon, to R Madeira) and extreme N Bolivia (E Pando).



**Descriptive notes.** 13-14 cm; 17-20 g. Male is grey above, crown faintly barred darker, concealed white interscapular patch; wings dark yellowish-brown (more rufous in E), wing-coverts greyer, tipped buffy white; tail brownish-black and grey, tipped white; underparts paler, especially on throat and belly, central belly often white; iris grey or, often, brown. Female has forehead and crown dull rufous-brown, upperparts more olive-brown, wings brown (more rufous in E), wing-coverts and wings tipped and edged drab buffy white; tail warm dark brown, outer rectrices thinly tipped whitish; underparts pale grey, tinged yellowish-

brown on breast, sides and crissum, olive on flanks. Race *cayennensis* male has wing colour more reddish-brown than nominate; *canipennis* male has wings and wing-coverts grey, tipped and edged greyish-white, covert tips forming thin line, iris grey. **VOICE.** Loudsong a slightly accelerating series of up to c. 15 similar notes, very like that of *T. schistaceus* except notes becoming much shorter and descending only slightly in pitch, last 1-2 at higher pitch instead of falling. Call nasal and abrupt; in alarm a flat, raspy whine, or a clear note that becomes a raspy growl; also variable whines and abrupt notes.

**Habitat.** Mid-storey of lowland evergreen forest, to 1000 m; locally up to 1300 m in Venezuelan tepuis. Very much a bird of *terra firme* forest and forest borders; unlike *T. schistaceus*, not usually found in seasonally flooded forest. Most common in the sandy-soil forests of the Guianan region.

**Food and Feeding.** Little published. Feeds on variety of insects, especially katydids (Tettigoniidae) and grasshoppers (Acrididae), beetles (Coleoptera), bugs (Hemiptera), and adult and larval lepidopterans; also spiders and other arthropods. Pairs or individuals forage 2-25 m above ground, most commonly at 10-15 m in habitats with tall canopy, at 3-8 m in other habitats; progresses by hops and short flights, with frequent pauses to scan for prey. Takes prey by perch-gleans, sally-gleans or hover-gleans from all leaf, stem, vine and branch surfaces; perch-gleans with quick, stabbing motions of the bill. Less frequently associated with mixed-species flocks than is *T. schistaceus*, but occasionally joins understorey flocks of other antbirds, woodcreepers (Dendrocolaptidae) and foliage-gleaners (Furnariidae) as they move through its home range. Rarely recorded attending swarms of army ants (*Eciton burchelli*).

**Breeding.** Little recorded. Jan, May and Sept in French Guiana, and Aug-Nov in Brazil. Nest a dark-coloured open cup composed of rough black rhizomorphs surrounding branched rootlets, lined with black and brown rhizomorphs, decorated externally with dried leaves and twigs, suspended by rim from horizontal fork (attached to branches by smooth black rhizomorphs) 2-3 m above ground in understorey sapling or bush. Normal clutch 2 eggs, yellowish-white, with tangle of dark chestnut-brown spots, lines and hairlines "concentrated mostly on top third"; both sexes incubate during day. At a nest in Brazil (Manaus), both nestlings were parasitized by, respectively, 16 and 10 fly larvae.

**Movements.** Presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout most of its extensive range; less common in W Amazonia. Vast areas of protected suitable habitat exist



within its range: examples include Iwokrama Forest Reserve, in Guyana, Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve, in Peru, Jau National Park, in Brazil, and Alto Orinoco-Casiquiare Biosphere Reserve, Caura Forest Reserve and Imataca Forest Reserve and El Dorado, in Venezuela. Somewhat sensitive to selective logging.

**Bibliography.** Álvarez (1994), Alverson *et al.* (2001), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, M.L. *et al.* (1998), Isler, P.R. & Whitney (2002), Mason (1996), Meyer de Schauensee & Phelps (1978), Nehrkorn (1914), O'Neill & Pearson (1974), Oniki & Willis (1982), Parker (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schönwetter & Meise (1967), Selater & Salvin (1873), Sick (1993), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Stouffer & Bierregaard (1995), Tallman & Tallman (1994), Thiollay (1988a, 1994), Tostain (1990, 2003), Tostain *et al.* (1992), Willard *et al.* (1991), Willis (1977, 1984d), Zimmer, J.T. (1933b), Zimmer, K.J. (2003a).

### 33. Upland Antshrike

#### *Thamnophilus aroyae*

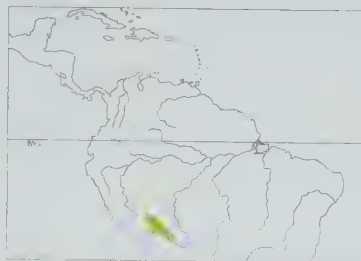
**French:** Batará montagnard    **German:** Hochland-Ameisenwürger    **Spanish:** Batará Montano

**Taxonomy.** *Dysithamnus aroyae* Hellmayr, 1904, Oroya, Inambari Valley, 3000 ft [c. 900 m], Puno, Peru.

Relationships uncertain. Monotypic.

**Distribution.** Extreme SE Peru (Puno) and NW Bolivia (La Paz, Cochabamba).

**Descriptive notes.** 13-14 cm; 19-21 g. Male is grey, crown sometimes blackish, pale interscapular patch vestigial or absent; wings and tail brownish-black, wing-coverts dotted white, tail tips spotted white; posterior underparts faintly to obviously barred, crissum feathers tipped white. Female has crown dark rufous, ear-coverts white-spotted dark grey, upperparts and wings dark olive-brown; tail blackish-brown, outer rectrices tipped white; underparts olive-brown, tinged clay colour, throat and centre of belly pale buff. Juvenile male resembles female, but buff wing-covert spots and tail tips; subadult male is like adult except wings brownish. **VOICE.** Loudsong a



short (3-6 notes, duration highly variable) series of evenly paced nasal notes, first and last notes slightly lower-pitched, final note usually like preceding ones but longer or, occasionally, transformed into a snarl or omitted entirely. Calls include nasal note c. 0.4 seconds long that is often repeated irregularly, and slightly downslurred snarl.

**Habitat.** Montane evergreen-forest edge and adjacent second growth, typically in dense thickets, often those with bamboo, from 600 m to 1700 m. Sometimes found in forest interior, but no more than c. 30 m from edge.

**Food and Feeding.** Little known. Feeds primarily on insects, probably also other arthropods; six stomachs all contained insects, including beetles (Coleoptera) and a 15 × 2 mm caterpillar (Lepidoptera), one also held two seeds measuring 2 × 1 mm. Pairs or individuals forage at 1.5-3 m, rarely to 6 m, in very dense, large-leaved bushes and vine tangles. Techniques consist mainly of vertical sally-gleans of c. 15 cm to underside of leaves, including bamboo, and perch-gleans to woody stems and branches, vine tangles around tree trunks, bamboo leaves, and tops of ferns. Occasionally searches clusters of dead bamboo and other leaves trapped above ground in thickets. Does not regularly join mixed-species flocks.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Bolivian and Peruvian Lower Yungas EBA. Was possibly once restricted to shrubby habitats created by natural landslides; with the arrival of humans, may be spreading along roads and other man-made clearings.

**Bibliography.** Cory & Hellmayr (1924), Isler & Whitney (2002), Parker (2003a), Parker & Bailey (1991), Parker *et al.* (1991), Perry *et al.* (1997), Remsen (2003b), Remsen & Parker (1984), Remsen *et al.* (1982), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Zimmer (1933b).





34

ssp punctatus

35

ssp leucogaster

36

ssp stictocephalus

ssp hualagae

37

38

ssp amazonicus

40

39

ssp cinereiceps

ssp obscurus

inches  
cm

PLATE 45



## 34. Western Slaty Antshrike

### *Thamnophilus atrinucha*

**French:** Batará à nuque noire

**Spanish:** Batará Pizarroso Occidental

**German:** Westlicher Tropfenameisenwürger

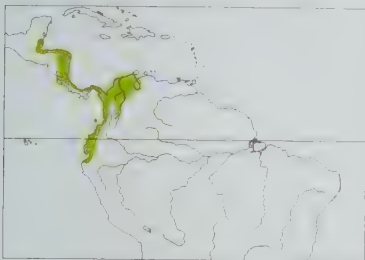
**Other common names:** Slaty Antshrike (when merged with members of *T. punctatus* superspecies)

**Taxonomy.** *Thamnophilus atrinucha* Salvin and Godman, 1892, Panama.

Formerly considered conspecific with *T. punctatus*, *T. stictiocephalus*, *T. sticturus*, *T. pelzelni* and *T. ambiguus*, but now thought not to belong in this group (see page 450). Described form *subcinerus* (N Colombia) is regarded as a clinal variant of nominate. Two subspecies recognized.

#### Subspecies and Distribution.

*T. a. atrinucha* Salvin & Godman, 1892 - Caribbean slope from S Belize and NE Guatemala S to N Colombia (including Magdalena Valley) and NW Venezuela (E to Trujillo, E side of L Maracaibo), and Pacific slope in NW Costa Rica and from C Panama (Coclé) S to extreme NW Peru (Tumbes). *T. a. gorgonae* Thayer & Bangs, 1905 - Gorgona I, off Cauca, W Colombia.



**Descriptive notes.** 15 cm; 21-24 g. Male is mostly grey, darker above, with black crown with geographically variable amounts of grey in forehead, black on centre of back, white interscapular patch (normally concealed), black outer scapulars, wings and tail, scapulars and flight-feathers edged white, wing-coverts and tail tips spotted white, median white spots on outer rectrices; darkness of plumage varies geographically, mostly along clines, with palest in NE Colombia (Magdalena and La Guajira: "subcinerus") and in Ecuador, darkest in W Venezuela (at base of Sierra de Perijá). Female is olive-brown with tinge of clay color.

our above, except forehead and crown tinged dull reddish-brown, dark brown wings and tail, wing-coverts spotted buffish-white, remiges and tail edged pale buff, and dusky cinnamon to pale ochraceous-white below, palest on throat; as with male, darkness of plumage geographically (clinally) variable. Subadult male resembles adult, but tinged buffy yellow to brown. Race *gorgonae* differs from nominate in having male forecrown extensively grey, female underparts tawny-cinnamon with throat only slightly paler than breast. **VOICE.** Loudsong a rapidly delivered (e.g. 19 notes, 2-3 seconds), usually uncountable, series of emphatic notes, nearly level in frequency and constant in pace, ending with longer note at slightly higher pitch; softsong a long series that begins slowly and then accelerates; rattle a loud bark followed by a roll of abrupt notes. Calls include "caw" often in groups of 2-4, a bark (without ensuing rattle), also more complex notes, apparently scolds.

**Habitat.** Understorey and mid-storey of lowland and foothill semi-deciduous forest, vine-rich moist evergreen forest, and edges of wet evergreen forest; also widespread in second growth in many previously forested areas. To 500 m in Guatemala, Nicaragua and Honduras, to 1000 m in Costa Rica and Panama, and to 1500 m in Colombia, Ecuador and Venezuela.

**Food and Feeding.** Feeds primarily on insects, including adult and larval Lepidoptera, katydids (Tettigoniidae), crickets (Gryllidae), grasshoppers (Acrididae), mantids (Mantidae), stick-insects (Phasmatidae), true bugs (Hemiptera, including Reduviidae), cicadas (Cicadidae), beetles (Coleoptera, including Cerambycidae and Curculionidae) and ants (Formicidae), and also other arthropods, including spiders and scorpions (Scorpiones); also small lizards. Takes surprisingly large prey for its size, spending considerable time beating and mandibulating larger items, and removing wings, urticating spines and other appendages before swallowing. Pairs or individuals forage 1-30 m above ground, mostly at 1-10 m (with central tendency of 2-3 m), progressing by short, heavy hops (which conspicuously move the vegetation), separated by pauses of up to 15 seconds (or more) to scan for prey, typically from horizontal branches. Commonly leans forwards and cranes neck to peer under leaves; also regularly inspects suspended dead-leaf clusters, dead palm fronds, and green leaves showing signs of extensive insect damage. Mostly perch-gleans; reaches out, up or down, or lunges to glean prey from all leaf, stem, vine and branch surfaces with quick stabbing motions of bill; also makes short (less than 1 m) upward-directed hover-gleans to take prey from undersides of overhanging vegetation. Often associated with mixed-species flocks (more commonly during non-breeding season) moving through its home range, but more frequently alone. In Panama, regularly attends army-ant swarms on Barro Colorado I (in 21 years of observation recorded at 524 swarms, mostly of *Eciton burchelli*), but in 68 instances those of smaller *Labidus praedator*), but not an habitual or even persistent follower, usually drifting away from swarms after a short period; at swarms, regularly supplanted by *Gymnophytus leucaspis* and *Phaenostictus mcleannani*. When foraging over ants, usually perches less than 1 m up, taking prey by short sallies to ground or nearby foliage, or by reach-and-glean. On Barro Colorado I, also recorded as visiting window screens and other man-made structures to glean insects attracted by artificial lights.

**Breeding.** Jan-Sept in Costa Rica and Dec-Oct (peak May-Aug) in Panama. Nest built by both sexes, commencing on average 10 days prior to egg-laying, a thin-walled cup loosely woven (contents usually visible from below) of fine rootlets and vegetable fibres, coarser on outside, usually lined with black, shiny rhizomorphs, often decorated externally with mosses that may be woven into the rhizomorphs of inner layer, suspended by rim in horizontal fork 1-4 m up in slender branch of understorey sapling or slender bush. Normal clutch 2 eggs, typically laid two days apart, creamy white, heavily spotted and blotched with various shades of brown and purple, more concentrated on larger end; regular incubation begins when clutch complete, by both sexes during day, by female alone at night, period typically 15-16 days; chick hatches blind, dark-skinned, without down; both parents brood and feed young, which after 7-8 days brooded only at night (by female) or during strong daytime rains; young leave nest at 9-10 days, initially remain concealed in vegetation high above ground, but continue to be fed by adults for up to 38-42 days, and forage with them at least until 50-60 days after leaving nest; both parents perform distraction displays to potential predators near active nests or fledglings, raise crest, part back feathers to reveal white interscapular patch, spread wings and tail, and flutter about as if injured. Nest predation can be high; of 32 nests followed at Barro Colorado I, Panama, only 10% successfully fledged one or more young, with interval between loss of one nest and beginning rebuilding of next 1-4 days, interval until start of second clutch following predation 9-14 days; at mainland sites in Panama Canal area, however, success was higher, 46% for 54 nests and 21% for 81 nests in two successive years; in one study, most important nest predators were nocturnal mammals.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout much of its range. This includes a number of protected areas, such as La Selva Biological Reserve, in Costa Rica, Soberania and Darién National Parks and Nusigandi Forest Reserve, in Panama, and Maquipucuna Reserve and Rio Palenque Science Centre, in Ecuador. Recently found to occur on the Pacific slope of Costa Rica at Santa Rosa National Park, and in Peru in the Tumbes National Reserve, where at least five territories located in Jan 2001. These extend the known range of the species to include two additional large, protected areas. Ability to colonize and thrive in forest-edge and second-growth forest habitats gives it a higher degree of tolerance of human habitat disturbance than exhibited by most forest-dwelling antbirds.

**Bibliography.** Blake & Loiseleur (1991), Brumfield & Capparella (1996), Carriker (1910), Cody (2000), Cory & Hellmayr (1924), Gradwohl & Greenberg (1980), Greenberg & Gradwohl (1980, 1985, 1986), Hilty (2003a), Hilty & Brown (1986), Howell & Webb (1995a), Isler, M.L., Isler & Whitney (1997), Isler, M.L., Isler, Whitney & Walker (2001), Isler, P.R. & Whitney (2002), Johnson (1953), Lockwood (1999), Meyer de Schauensee & Phelps (1978), Monroe (1968), Oniki (1975), Parker & Carr (1992), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robinson *et al.* (2000), Roper (2000), Roper & Goldstein (1997), Salaman, Donegan & Cuervo (2002), Schamske & Brokaw (1981), Schönwetter & Meise (1967, 1988), Skutch (1934, 1940, 1945a, 1946, 1954, 1969c, 1976, 1996a), Slud (1960, 1964), Stiles & Skutch (1989), Stone (1918), Sturgis (1928), Wetmore (1972), Whitney (2003a), Willis (1980, 1988b), Willis & Eisenmann (1979), Zimmer (2003a).

## 35. Northern Slaty Antshrike

### *Thamnophilus punctatus*

**French:** Batará tacheté

**Spanish:** Batará Pizarroso Punteado

**German:** Nördlicher Tropfenameisenwürger

**Other common names:** Eastern/Guianan Slaty Antshrike; Slaty Antshrike (when merged with others of superspecies); Peruvian Slaty Antshrike (*leucogaster*)

**Taxonomy.** *Lanius punctatus* Shaw, 1809, Cayenne.

Forms a superspecies with *T. stictiocephalus*, *T. sticturus*, *T. pelzelni* and *T. ambiguus*; all formerly considered conspecific, with *T. atrinucha* traditionally included too (see page 450). Race *leucogaster* (with *huallagae*) has sometimes been treated as a separate species. Race *huallagae* was originally placed with *T. amazonicus*. Four subspecies recognized.

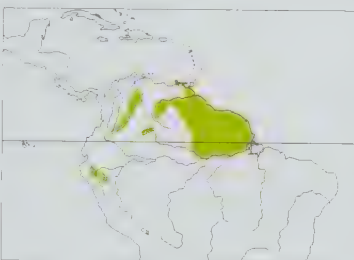
#### Subspecies and Distribution.

*T. p. punctatus* (Shaw, 1809) - E & S Venezuela (Amazonas, Bolívar, Sucre, Monagas, Delta Amacuro), the Guianas, and Brazil N of R Amazon and E of R Negro (in NE Amazonas, Roraima, N Pará, Amapá); sight records from extreme E Amazonian Colombia (Guania, Vaupés) probably this race.

*T. p. interpositus* Hartert & Goodson, 1917 - E base of Andes in W Venezuela (Táchira, Apure, Barinas) and Colombia (Boyacá, Meta, W Caquetá).

*T. p. huallagae* Carriker, 1934 - R Huallagala drainage in N Peru (San Martín).

*T. p. leucogaster* Hellmayr, 1924 - R Maraño drainage in extreme S Ecuador (Zamora-Chinchipe) and N Peru (Amazonas, Cajamarca).



**Descriptive notes.** 13-15 cm; 19-21 g (*punctatus*), 16-18 g (*leucogaster*). Male nominate race has crown black, forehead mostly grey; back grey with few black feather tips, white interscapular patch (concealed); outer scapulars and wings black, boldly spotted and edged white; tail black, tips and median spots on outer feathers white; underparts grey, belly whitish in some regions. Female has crown tawny, back yellowish olive-brown with few or no blackish feather tips, wings dark brown, coverts spotted white, flight-feathers edged pale buff, tail reddish yellow-brown, tips and median spots on outer feathers white, underparts light buffy olive, whitest on throat and belly. Race *interpositus* male has forehead and upperparts black except for a few grey feather tips, underparts dark grey, female darker and more clay-coloured than nominate; *leucogaster* has forehead mostly black, crown usually with hidden white spots, upperparts dark grey with few or no black patches, underparts grey, extensively white on centre of belly, female back brown, underparts white except for light buffy olive across breast and on sides and flanks; *huallagae* has forecrown black, crown usually with hidden white spots, back and underparts darker grey than nominate, female underparts more olive, less yellow. **VOICE.** Loudsong an accelerating series of usually 10-15 progressively shorter notes starting with laboured, slow-paced notes that are countable, ending with trill of abrupt uncountable notes often sounding higher in pitch, pace somewhat variable regionally, race *leucogaster* fastest; rattle a series of wooden notes, relatively slow for a rattle, fastest in *leucogaster*. Calls include short "caw", longer "caw", and abrupt raspy note.

**Habitat.** Understorey and mid-storey of lowland evergreen-forest edge, white-sand forest, savanna woodland, deciduous and semi-deciduous woodland, gallery forest and secondary forest, mostly below 1000 m; locally to 1500 m in Venezuelan tepuis (*punctatus*), and to 1200 m in R Maraño drainage (*leucogaster*).

**Food and Feeding.** Little published. Feeds on variety of insects, including lepidopteran larvae, katydids (Tettigoniidae) and grasshoppers (Acrididae), mantids (Mantidae), weevils (Curculionidae), true bugs (Hemiptera, Homoptera) and neuropterans (Ascalapidae), as well as other arthropods. Pairs or individuals forage 1-12 m above ground, mostly at 1-6 m, progressing by short hops, separated by pauses of up to several seconds to scan for prey. Reaches out, up or down, or lunges, gleaning prey from all leaf, stem, vine and branch surfaces with quick stabbing motions of the bill; also makes short (less than 1 m) upward-directed sallies to glean items from undersides of overhanging vegetation; occasionally charges into hanging dead-leaf clusters to dislodge insect prey. A male in N Peru (*leucogaster*) once observed to forage for c. 2 minutes on ground, by flipping over leaves. Habitually shivers its tail while foraging, particularly immediately following perch changes. At times associates with mixed-species flocks moving through its home range; occasionally follows army ants (*Eciton burchelli*).

**Breeding.** Little published. In Brazil, nests and recently fledged young recorded in Oct-Dec in Manaus area (Amazonas), nest in Aug in Pará; nests in the dry season, with a nest in mid-Aug, in French Guiana. Nest a cup composed of shreds of plant fibres, with inner lining of long strands of fine grasses and blackish horsehair-like rhizomorphs, suspended by rim from horizontal fork; a nest in Brazil (near Manaus) was of black and brown rhizomorphs attached to rotten pieces of palm



leaves (with some fungi growing over them), decomposing grass and roots, lined with branched rootlets attached to rhizomorphs (which joined nest to branches), suspended from a 45° fork 1 m up in a *Ternstroemia* bush; another in Brazil (N bank of Amazon in Pará) was a regular and well-constructed cup, the outside decorated with green moss, placed low in bush on a riverbank, and a more vaguely described nest from Venezuela appears to be similar; a nest in French Guiana was made from a lot of mosses, lined with fibres of a *Marasmius* fungus, placed 46 cm above ground in small shrub. Normal clutch 2 eggs, pale creamy buff with irregularly distributed reddish-brown blotches, once white with dark spots and stripes.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Nominate race is fairly common to common throughout its rather extensive range. It is not restricted to one habitat, and benefits from human encroachment under certain conditions, e.g. population density increased after selective logging in a managed forest in Venezuela. In contrast, the two races in S Ecuador and Peru should be considered at risk, as their respective geographical ranges are extremely limited, and the dry-forest habitats which they occupy are under intensive pressure from agricultural development. The situation may be most urgent for *hualtagae*, for which suitable habitat appears to be highly fragmented and restricted to remnant small patches of woodland; *leucogaster* is locally common in somewhat larger forest patches in the R Marañón drainage, but these areas are not formally protected, and danger of near-total habitat destruction persists. Creation of one or more dry-forest reserves in this part of the Marañón drainage could help to preserve a healthy population of the latter race, in addition to benefiting many other taxa with restricted ranges in the same region; these include Spot-throated Hummingbird (*Leucippus taczanowskii*), Marañon Spinetail (*Synallaxis maranonica*), Marañon Crescentchest (*Melanopareia maranonica*) and Black-capped Sparrow (*Arremon abeillei*), as well as the distinctive race *chinchipensis* of Necklaced Spinetail (*Synallaxis stictothorax*).

**Bibliography** Begazo *et al.* (2001), Belcher (1938), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler, M.L., Isler & Whitney (1997), Isler, M.L., Isler, Whitney & Walker (2001), Isler, P.R. & Whitney (2002), Mason (1996), Meyer de Schauensee & Phelps (1978), Novas (1974), Oniki (1975), Oniki & Willis (1982), Pacheco & Whitney (1997), Parker (2003a), Reynaud (1998), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Sick (1993), Sneath (1935), Thiollay (1994), Tostain (2003), Tostain *et al.* (1992), Vleck & Vleck (1979), Whitney (2003a), Willis (1984, 1988b), Zimmer, J.T. (1933b), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997).

## 36. Natterer's Slaty Antshrike

### *Thamnophilus stictocephalus*

**French:** Batara de Natterer

**German:** Natterers Tropfennameisenwürger

**Spanish:** Batará Pizarroso de Natterer

**Taxonomy.** *Thamnophilus stictocephalus* Pelzelin, 1868. São Vicente, Mato Grosso, Brazil.

Forms a superspecies with *T. punctatus*, *T. sticturus*, *T. pelzelni* and *T. ambiguus*; all formerly considered conspecific, with *T. atrinucha* traditionally included too (see page 450). Described races *saturatus* and *zimmeri* (both C Brazil) represent clinal variation of nominate, with which merged. Two subspecies recognized.

**Subspecies and Distribution.**

*T. s. stictocephalus* Pelzelin, 1868 - Brazil S of R Amazon (from R Madeira E to Marajó I and R Tocantins, in Pará, and SW to Rondônia and N & W Mato Grosso) and extreme N Bolivia (N Beni). *T. v. parkeri* Isler *et al.*, 1997 - extreme NE Bolivia in N Santa Cruz (Serranía de Huanchaca).

**Descriptive notes.** 14-15 cm; 19-22 g. Male has crown black, forehead black with some grey spots; black and grey upperparts, white interscapular patch (concealed); outer scapulars and wings black, boldly spotted and edged white; tail black, tipped white; underparts grey, whitish on belly. Female has crown rufous, back reddish yellow-brown, scapulars and wings dark brown, spotted and edged white, flight-feathers edged clay colour, tail dark brown, tipped white, underparts variably mixed light clay colour and light grey, paler on throat and belly. Race *parkeri* male has forehead extensively grey, back with few black spots, underparts paler than nominate with white centre of belly, female upperparts less reddish. Voice.

Loudsong an accelerating series (e.g. 20 notes, 3 seconds) of emphatic notes, generally level in frequency and pitch, sometimes rising or dropping off at end, only initial notes countable; rattle is a growl extending into a roll, so rapid that individual notes barely distinguishable. Calls include short and long "caw" notes and abrupt growl.

**Habitat.** Understorey and mid-storey of lowland evergreen-forest edge, deciduous and semi-deciduous woodland, and "islands" of sandy-soil forest within taller forest; from near sea-level along R Amazon to 700 m in Mato Grosso and Serranía de Huanchaca. Inhabits primarily sandy-soil patches, humid-forest edge and forest light-gaps along R Amazon; in stunted, semi-deciduous forest growing on rocky outcrops in N Mato Grosso. Farther S, where Amazonian forest gives way to more open habitats, has been found in gallery forest. In Huanchaca Mts, occurs along edges of large stands of evergreen forest surrounded by grassland and *cerrado*.

**Food and Feeding.** Little published. Feeds on various insects, including lepidopteran larvae, orthopterans such as katydids (Tettigoniidae) and grasshoppers (Acrididae), true bugs (Hemiptera), cicadas (Cicadidae) and beetles (Coleoptera), also other arthropods. Pairs or individuals forage 1-10 m above ground, progressing by short hops, with pauses of up to several seconds to scan for prey. Reaches out, up or down, or lunges to glean prey from all leaf, stem, vine and branch surfaces, using quick stabbing motions of the bill; also makes short (less than 1 m) upward-directed sallies to glean items from undersides of overhanging vegetation. Habitually shivers tail when foraging, particularly immediately following perch changes. Not known to join mixed-species flocks; occasionally follows army ants (*Eciton burchelli*).

**Breeding.** Unknown.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Locally fairly common throughout its range. This encompasses some large protected areas, e.g. Tapajós National Park, Caxiuanã National Forest and Cristalino State Park, in Brazil, and Noel Kempf Mercado National Park, in Bolivia. Dry-forest habitats occupied by this species could come under threat, but substantial populations exist within humid-forest regions that are largely intact and under no threat of development.

**Bibliography** Isler, M.L., Isler & Whitney (1997), Isler, M.L., Isler, Whitney & Walker (2001), Isler, P.R. & Whitney (2002), Killean & Schulenberg (1998), Oren & Parker (1997), Parker (2003a), Schubarth *et al.* (1965), Sick (1993), Willis (1984d), Zimmer, J.T. (1933b), Zimmer, K.J. (2003a), Zimmer, K.J., Parker *et al.* (1997).

## 37. Bolivian Slaty Antshrike

### *Thamnophilus sticturus*

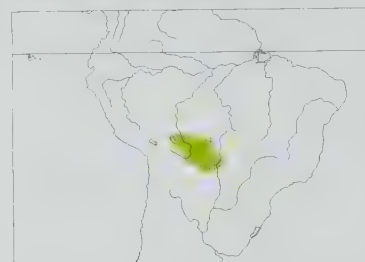
**French:** Batara à queue tachetée

**German:** Bolivien-Tropfennameisenwürger

**Spanish:** Batará Pizarroso Boliviano

**Taxonomy.** *Thamnophilus sticturus* Pelzelin, 1868, Engenho do Capitão Gama, Mato Grosso, Brazil. Forms a superspecies with *T. punctatus*, *T. stictocephalus*, *T. pelzelni* and *T. ambiguus*; all formerly considered conspecific, with *T. atrinucha* traditionally included too (see page 450). Monotypic.

**Distribution.** C & E Bolivia (Beni, Cochabamba, Santa Cruz), immediately adjacent Brazil (extreme W parts of Mato Grosso and Mato Grosso do Sul) and N Paraguay (Alto Paraguay).



**Descriptive notes.** 14 cm; 18-20 g. Male has crown black, forehead grey, grey extending deeply into crown; grey upperparts with a few black feathers centrally, white interscapular patch (concealed); outer scapulars and wings black, boldly spotted and edged white; tail black, tips and median spots white; underparts light grey, extensively white on belly. Female has crown bright reddish-brown, back yellowish olive-brown, scapulars and wings dark brown, spotted and edged white, flight-feathers edged pale buff, tail dark brown with white tips and median spots, underparts white, light yellowish-brown across breast and on sides, flanks and

crissum. **Voice.** Loudsong a series starting slowly and speeding up into rattling trill, rises in frequency and intensity, reaching peak near end of trill, then falls off; rattle a simple rapid repetition of abrupt notes highly variable in length and pace, short rattles tend to drop in frequency, longer rattles flatter. Call a "caw" note, variable in length, sometimes extended into harsh, downward-inflected growl.

**Habitat.** Understorey and mid-storey of dry semi-deciduous forest with, typically, extensive vine tangles, also gallery forest both in more open regions and within extensive stands of more humid forest, and second-growth forest; to 950 m.

**Food and Feeding.** Little published. Diet presumably arthropods. Forages in pairs or individually, 1-7 m above ground, progressing by short hops separated by pauses of up to several seconds to scan for prey. Main technique involves reaching out, up or down to glean prey items with quick stabbing motions of the bill; also makes short (less than 1 m) upward-directed or lateral sallies to vegetation. Habitually shivers tail when foraging, particularly immediately following perch changes. Not observed to join mixed-species flocks or to follow army ants.

**Breeding.** Almost no information available; egg size, but not coloration, known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Locally fairly common throughout its rather small range. Unfortunately, this region lacks large protected areas and has recently come under increased logging pressure. At one study site where selective logging took place, its population density increased after logging.

**Bibliography** Capper, Clay, Madroño & Mazar Barnett (2001), Capper, Clay, Madroño, Mazar Barnett, Burfield *et al.* (2001), Cory & Hellmayr (1924), Davis (1993), Flores *et al.* (2001), Isler, M.L., Isler & Whitney (1997), Isler, M.L., Isler, Whitney & Walker (2001), Isler, P.R. & Whitney (2002), Parker (2003a), Schönwetter & Meise (1967), Sick (1993), Whitney (2003a), Zimmer (1933b).

## 38. Planalto Slaty Antshrike

### *Thamnophilus pelzelni*

**French:** Batara de Pelzelin

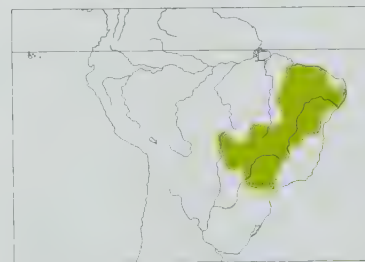
**German:** Planalto-Tropfennameisenwürger

**Spanish:** Batará Pizarroso del Planalto

**Taxonomy.** *Thamnophilus punctatus pelzelni* Hellmayr, 1924, Abrilongo, Mato Grosso, Brazil.

Forms a superspecies with *T. punctatus*, *T. stictocephalus*, *T. sticturus* and *T. ambiguus*; all formerly considered conspecific, with *T. atrinucha* traditionally included too (see page 450). Monotypic.

**Distribution.** C & E Brazil from E Maranhão, Ceará and Paraíba to N Minas Gerais and W Bahia and from E & S Mato Grosso and Goiás to N Mato Grosso do Sul, extreme N Paraná and W São Paulo.



**Descriptive notes.** 14 cm; 16-20 g. Male has crown black, forehead mixed with grey; upperparts grey with some black feathers centrally, white interscapular patch (concealed); wings brownish-black, boldly spotted and edged white, tail black, tips and median spots white; underparts light grey, throat and belly extensively white, belly often faintly tinged buff. Female has crown bright rufous, back cinnamon-rufous with sometimes a few blackish feather tips, wings dark brown, spotted and edged white, flight-feathers edged pale clay colour, tail mostly dark brown, tips white, underparts light cinnamon-buff, whitest on throat and belly. **Voice.**

Loudsong an accelerating series of rather harsh, dry notes (e.g. 20 notes, 5 seconds) ending with short roll, rises in pitch, then levels off, and occasionally falls slightly at end; rattle a simple rapid repetition of abrupt notes highly variable in length and pace, short rattles tend to drop in frequency, longer rattles flatter. Calls include a "caw" note of variable length, a longer whistle, and a flat, short growl.

**Habitat.** Understorey and mid-storey of deciduous and semi-deciduous forest, especially with vines (*mata-de-cipó* forest), and gallery forest; also locally at edge of evergreen forest; mostly at 400-800 m, locally to near sea-level in NE and to 1100 m in the Planalto. In S & W portions of range, confined mainly to gallery forest; common in deciduous and semi-deciduous woodland in N.

**Food and Feeding.** Little published. Feeds primarily on insects, including lepidopteran larvae, katydids (Tettigoniidae), grasshoppers (Acrididae), mantids (Mantidae), stick-insects (Phasmatidae), crickets (Gryllidae), true bugs (Hemiptera) and weevils (Curculionidae), and other arthropods, including spiders. Pairs, individuals or family groups forage 1-15 m above ground, mostly 1-5 m, progressing by short hops separated by pauses of 1-5 seconds to scan for prey. In *mata-de-cipó* forest, frequently forages in crowns of understorey trees covered with mats of viny vegetation, reaching out, up or down, or lunging to glean items from all leaf, stem, vine and branch surfaces, using quick stabbing motions of the bill; often lingers at green leaves with obvious insect damage, picking repeatedly at same spots. In gallery forest and dry forest with fewer vines, more often forages closer to ground,



moving from perch to perch by short wing-assisted hops, periodically dropping to ground to take prey from top of leaf litter, or occasionally making short upward-directed sallies to take items from undersides of overhanging vegetation. A pair observed in Chapada dos Guimarães (Mato Grosso) foraged opportunistically in a recently burned patch of gallery forest; perched on charred saplings less than 1 m up, and dropped to ground to take subsurface arthropods that emerged from still smouldering layers of topsoil. Habitually shivers its tail while foraging, particularly immediately after making a perch change. Frequently associates with mixed-species flocks passing through its home range. One record of six birds (which appeared to represent three pairs of adults, rather than a family group) attending army ants in ecotone between dry forest and *caatinga* in N Minas Gerais: they followed the ants for entire period of observation (c. 90 minutes), and were the most numerous bird species in attendance; from vertical and horizontal perches low (up to 0.75 m) over ants, individuals made mostly darting sallies to ground or to bare stems and branches for prey; one female leaned forwards from a low horizontal perch and repeatedly tossed dry leaves from the litter to reveal concealed arthropods; individuals aggressively displaced and supplanted one another from choice perches immediately above the swarm front, and sang and called repeatedly.

**Breeding.** Little recorded. Single published description of two nests, found in Oct, each an open cup suspended by rim from horizontal fork; one nest with 3 eggs, the other with 2, eggs whitish, with irregular reddish-brown speckling and blotches concentrated at larger end.

**Movements.** Presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Common throughout most of its range. This includes a number of protected areas, e.g. Chapada dos Guimarães, Sete Cidades, Serra do Cipó and Serra da Canastra National Parks, and Chapada do Araripe National Forest. Highest densities found in NE part of range (Ceará, Pernambuco, Bahia), the dry-forest habitats of which are, however, largely unprotected and are being continually cleared for agricultural development and for cutting of firewood.

**Bibliography.** Cintra & Yamashita (1990), Coelho (1987), Cory & Hellmayr (1924), Ihering (1900), Isler, M.L., Isler & Whitney (1997), Isler, M.L., Isler, Whitney & Walker (2001), Isler, P.R. & Whitney (2002), Motta-Júnior & Vasconcello (1996), do Nascimento *et al.* (2000), Olmos (1993), Parker (2003a), Ribon & Maldonado-Coelho (2001), Sick (1955, 1993), da Silva & Oniki (1988), Iubelis & Tomás (1999), Zimmer, J.T. (1933b), Zimmer, K.J. (2003a).

## 39. Sooretama Slaty Antshrike

*Thamnophilus ambiguus*

**French:** Batara de Sooretama

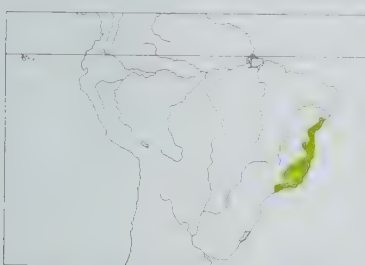
**Spanish:** Batará Pizarroso de Sooretama

**German:** Sooretama-Tropfenameisenwürger

**Taxonomy.** [*Thamnophilus naevius*] *ambiguus* Swainson, 1825. Minas Gerais, Brazil.

Forms a superspecies with *T. punctatus*, *T. sticticephalus*, *T. sticturus* and *T. pelzelni*; all formerly considered conspecific, with *T. atrinucha* traditionally included too (see page 450). Monotypic.

**Distribution.** SE Brazil in coastal region from S Sergipe S to Rio de Janeiro, extending inland in Minas Gerais (R Doce Valley); one probable sight record in extreme NE São Paulo.



**Descriptive notes.** 14–15 cm. Male has forehead and crown black, forehead with few grey spots; upperparts grey with central black patch, white interscapular patch (concealed); wings black, boldly spotted and edged white, tail black, tips and median spots white; underparts pale grey, often whiter on throat and belly. Female has crown warm tawny-brown, back olive-grey with clay-coloured tinge, a few blackish feather tips centrally, wings dark brown, spotted and edged white, flight-feathers edged pale clay colour, tail dark brown, tips and median spots white, underparts mixed clay colour and smoke-grey, whitest on throat and belly. **VOICES.** Loudsong an

accelerating series of rather harsh, dry notes (e.g. 20 notes, 5 seconds) ending with short roll, mostly even in pitch but rises slightly at start and sometimes falls slightly at end; rattle a rapid repetition of abrupt notes very variable in length and pace, short rattles tend to drop in frequency, longer rattles flatter. Calls include “caw” note, variable in length, typically downward-inflected, usually given singly, and more complex complaining note; also downward-inflected short growl, like a raspy “caw”.

**Habitat.** Understorey and mid-storey of lowland evergreen-forest edge, also woodland growing on sandy soil in coastal belt, including second growth near woodland; to 700 m. Favours forest edge and light-gaps within interior.

**Food and Feeding.** Little published. Feeds on insects and other arthropods, including moths and larval lepidopterans, cockroaches (Blattodea), beetles and borers (Coleoptera, including Bostrichidae), and ants (Formicidae). Forages in pairs or individually, or in family groups, mostly in thickets and vine tangles 1–10 m above ground, sometimes to 25 m; progresses by short hops, most often on horizontal branches but sometime climbing up vines wrapped around tree trunks, with pauses of up to several seconds to scan for prey. Reaches out, up or down or makes lunges to glean prey from all surfaces of leaves, stems, vines and branches, with quick stabbing motions of the bill; also makes frequent short (to 1.5 m) upward-directed sallies to take prey from underside of overhanging vegetation. Occasionally chases prey to the ground or picks through leaf litter. Habitually shivers its tail while foraging, especially immediately following perch changes. Often associates with mixed-species flocks. Recorded as rarely following army ants (*Eciton burchelli*).

**Breeding.** Little recorded. One published record of recently fledged young in Bahia (near Santo Amaro) in late Nov. Nest described as a crucible suspended from horizontal fork, typical of the genus. Eggs whitish with irregularly distributed purplish-brown and dark grey spots, denser on larger end.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common in its relatively narrow range. This includes several protected areas, e.g. Monte Pascoal National Park, Pau Ecological Station, Porto Seguro Reserve, Linhares Natural Reserve, and Sooretama, Una and Crasto Biological Reserves.

**Bibliography.** Cory & Hellmayr (1924), Euler (1900), Ihering (1900), Isler, M.L. & Isler (2003a), Isler, M.L., Isler & Whitney (1997), Isler, M.L., Isler, Whitney & Walker (2001), Isler, P.R. & Whitney (2002), Moojen *et al.* (1941), Motta-Júnior (1990), Parker (2003a), Schönwetter & Meise (1967), Scott & Brooke (1985), Sick (1993), Stotz (1990b), Whitney (2003a), Willis (1984d), Zimmer, J.T. (1933b), Zimmer, K.J. (2003a).

## 40. Amazonian Antshrike

*Thamnophilus amazonicus*

**French:** Batara d'Amazonie

**Spanish:** Batará Amazónico

**German:** Amazonien-Tropfenameisenwürger

**Other common names:** Grey-capped Antshrike (*cinereiceps*)

**Taxonomy.** *Thamnophilus amazonicus* P. L. Slater, 1858, Rio Javari, north-east Peru.

Relationships uncertain; has been treated as forming a superspecies with *T. caerulescens*, but possibly closest to the *T. punctatus* superspecies. S of R Amazon plumage variation is clinal, but apparent habitat differences suggest that populations may be distinct, although geographical limits of the three S races are tentative; similarly, in NW, some specimens and sight descriptions from W Amazonia suggest intermediacy in plumage between nominate and *cinereiceps*, but plumage and habitat differences again support the maintaining of races; further research needed. Race *huallagae* of *T. punctatus* has sometimes been considered to belong in present species. Five subspecies currently recognized.

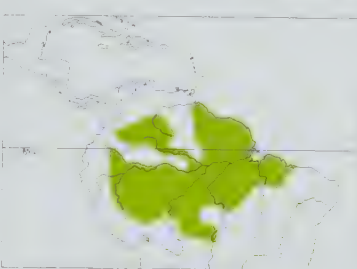
**Subspecies and Distribution.**

*T. a. cinereiceps* Pelzeln, 1868 - SW Venezuela (W Amazonas), EC Colombia (Vichada and Meta S to Caquetá and Vaupés) and NW Brazil (both banks of upper R Negro and along W lower bank S to R Solimões).

*T. a. divaricatus* Mees, 1974 - extreme E Venezuela (E Bolívar), the Guianas, and NE Brazil N of R Amazon (E of R Branco and R Negro, E to N Pará and Amapá).

*T. a. amazonicus* P. L. Slater, 1858 - SE Colombia (S Amazonas), extreme E Ecuador (E Napo), E Peru, W Brazil S of R Amazon and W of R Tapajós (S Amazonas and extreme W Pará S to Acre, Rondônia and W Mato Grosso) and N Bolivia (Pando, N La Paz, N Beni, NE Santa Cruz).

*T. a. obscurus* J. T. Zimmer, 1933 - SC Amazonian Brazil (S Pará between R Tapajós and R Tocantins). *T. a. paraensis* Todd, 1927 - E of R Tocantins in E Pará, W Maranhão and N Tocantins.



**Descriptive notes.** 14 cm: 17–21 g. Male nominate race has centre of forehead and crown black, side of head grey; back mostly black, rump grey, interscapular patch white; outer scapulars and wings black, boldly spotted and edged white; tail black, tips and median spots on outer rectrices white; underparts grey. Female has crown bright rufous, rest of head and underparts bright yellowish red-brown, upperparts deep olive, wings and tail patterned like male but browner. Flight-feathers edged pale olive. Race *cinereiceps* is smaller and paler than nominate, male crown grey, upperparts grey with a few black feathers on upper

back, female with anterior underparts mixed with grey, belly and crissum buff-tinged smoky white, flanks olive-grey; *divaricatus* male has side of head blackish-grey, back mixed black and grey, female underparts paler and greyer than nominate; *paraensis* male is paler below, often with faint white bars on belly, female with tail tinged reddish, lower underparts pale cinnamon-buff; *obscurus* is darkest, male mostly or entirely black above, dark grey below, female dark and often lacking pale tips of central rectrices. **VOICE.** Loudsong a long (e.g. 30 notes, 3 seconds) uncountable series that typically increases in speed and pitch initially, gradually levels off, then most often descends, although ending variable. Final notes may change in quality and/or strengthen or fade in intensity. Calls include long, downslurred, complaining “caw”, also an emphatic note with quality of a bark, and long raspy growl resembling a short rattle.

**Habitat.** Understorey and mid-storey of lowland evergreen forest, edges, and second growth, specific habitat preferences varying among races. In *N. cinereiceps* occurs in sandy-soil habitats, both in stunted savanna woodland growing on white-sand soil and in shrubby borders of taller *terra firme* and *igapó* forests, while *divaricatus* inhabits liana-rich parts of *terra firme* forest, locally in open forest near tepui summits and at river edges. Nominale race almost entirely confined to riverine viny borders and light-gaps in seasonally flooded *várzea* and *igapó*. Race *obscurus* more widely distributed in forest edges and openings, inside viny forest, dense secondary growth, and stands of *Guadua* bamboo within *terra firme* and transitional forests. Race *paraensis* is found primarily in second growth, less often in light-gaps in *terra firme* and *igapó* forests, rarely in *várzea*.

**Food and Feeding.** Little published. Feeds on a variety of insects, including lepidopteran larvae, katydids (Tettigoniidae), mantids (Mantidae), stick-insects (Phasmatidae) and beetles (Coleoptera), as well as spiders and other arthropods. Pairs or individuals forage mostly 5–17 m above ground, particularly in clusters of hanging vines along major tree trunks, and on fairly open large branches in interior portions of trees; routinely forages as low as 1 m in dense savanna woodland in SW Venezuela (*cinereiceps*), and also regularly in crowns of *Guadua* bamboo and interlacing vine tangles in SC Amazonian Brazil (*obscurus*). Advances with short hops separated by pauses to peer about; foraging pace faster than that of most congeners (perhaps most similar to *T. caerulescens*). Reaches out, up or down, or lunges to glean prey from leaf, stem, vine and branch surfaces, using quick stabbing motions of the bill; also frequently makes vertical jumping sallies to pluck prey from undersides of overhanging leaves; occasionally bends well over to look under branches. Frequently joins mixed-species flocks that come through its home range. Race *paraensis* recorded as occasionally attending army ants (*Eciton burchelli*).

**Breeding.** May–Jan in Brazil; food-carrying adults seen in Mar, Aug and Sept. Nest a deep cup 10 cm in diameter and 5 cm in depth, variably constructed with coarser materials on outside around finer material on inside, principally filiform stems of various plants, frequently with long black rhizomorph threads similar to horsehair, often ornamented with variable amounts of moss on outside, and suspended by rim from two slender branches of horizontal fork 1–3 m above ground in understorey bush or sapling. Normal clutch 2 eggs, creamy whitish with numerous violet-grey, reddish-brown or lilac spots, more concentrated at larger end; females observed carrying food, once to lianas where nest probably concealed.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Varies from being uncommon to being locally common. Extensive range includes vast areas of protected suitable habitat, examples being Brownsberg Nature Park, in Surinam, Yapacana National Park and Alto Orinoco-Casiquiare Biosphere Reserve, in Venezuela, Tinigua and Amacayacu National Parks and Chiribiquete National Park, in Colombia, Pacaya-Samiria National Reserve, in Peru, Tapajós and Jau National Parks and Cristalino State Park, in Brazil, and Noel Kempf Mercado National Park, in Bolivia. Furthermore, this species adapts well to second growth in some portions of its range, thus rendering it less vulnerable to habitat disturbance.

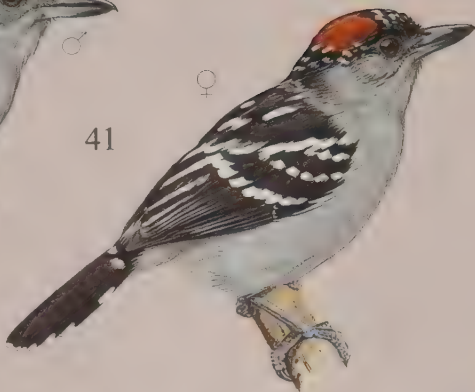
**Bibliography.** Álvarez (1994), Cory & Hellmayr (1924), Estevão (1926), Haverschmidt & Mees (1994), Hellmayr (1912b), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Meyer de Schauensee & Phelps (1978), Novaes (1969, 1970, 1973, 1980, 1982), Oates & Reid (1903), Oniki & Willis (1983b), Oren & Parker (1997), Parker (2003a), Pinto (1953), Reynaud (1998), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schönwetter & Meise (1967), Sick (1993), Sneath (1935), Stotz *et al.* (1996), Terborgh *et al.* (1984), Thiollay (1994), Tostain (2003), Tostain *et al.* (1992), Willis (1984d), Zimmer, J.T. (1933b), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997), Zimmer, K.J., Parker *et al.* (1997).



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cm 8



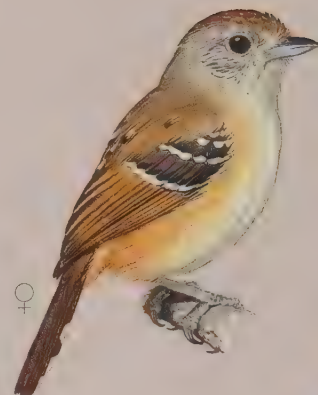
41



ssp  
*caerulescens*



ssp  
*paraguayensis*



ssp  
*gilvigaster*



42



Pernambuco

ssp *ochraceiventer*



ssp *cearensis*



Ceara



ssp  
*melanochrous*



EC Bolivia



NW Argentina

ssp *dinellii*



ssp *aspersiventer*





## 41. Streak-backed Antshrike

### *Thamnophilus insignis*

**French:** Batará à dos rayé **German:** Tepui-Tropfenameisenwürger **Spanish:** Batará Insigne

**Taxonomy.** *Thamnophilus insignis* Salvin and Godman, 1884, Mount Roraima, 5000 ft [c. 1500 m], Venezuela.

Relationships uncertain. Two subspecies recognized.

#### Subspecies and Distribution.

*T. i. nigrofrontalis* Phelps, Sr. & Phelps, Jr., 1947 - extreme SW Venezuela (Macizo de Cuao-Sipapo, in W Amazonas).

*T. i. insignis* Salvin & Godman, 1884 - S Venezuela (tepui of Bolívar and E Amazonas), and Mt Roraima and its vicinity in extreme W Guyana and adjoining N Brazil (extreme N Roraima).



**Descriptive notes.** 16-17 cm; 24-30 g. Male has crown and upperparts black, some white feathers on crown and nape; white inter-scapular patch exposed as spots or streaks on back; scapulars and wings black, boldly spotted and edged white; tail black, tips and median spots on outer rectrices white; throat and underparts grey, paler posteriorly. Female is similar to male except forehead faintly spotted white, rear crown dark red-brown, underparts somewhat paler. Race *nigrofrontalis* female has forehead solid black. **VOICE.** Loudsong an accelerating series of similar notes (e.g. 13 notes, 2-5 seconds), rising in

pitch, then levelling, terminating in emphatic, higher-pitched, long nasal note. Calls include somewhat downslurred raspy growl, variable in length, and soft squeak or "peep".

**Habitat.** Understorey and mid-storey of montane evergreen forest, at 900-2000 m. Primarily in stunted (canopy below 10 m) forest dominated by melastome (*Melastoma*) and forest-edge thickets of bamboo and *Brocchinia* scrub near tree-line.

**Food and Feeding.** Little published. Feeds on various insects and other arthropods. Forages in pairs or singly, mostly 1-5 m above ground, sometimes to canopy of stunted low forest, progressing deliberately by short hops separated by pauses of up to several seconds to scan for prey. Reaches out, up or down, or lunges to glean prey from all leaf, stem, vine and branch surfaces with quick stabbing motions of the bill. Occasionally joins mixed-species flocks, but more often alone.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Tepuis EBA. Uncommon to locally common. There are large numbers of specimens from the slopes of several tepuis in S Bolívar (e.g. Aprada, Chimantá, Jaua, Uaiján, Uei), indicating substantial populations in those areas. Owing to the largely inaccessible nature of the region, the tepuis have been little affected by human disturbance, and upper-elevation floras and faunas remain relatively pristine. Nevertheless, these ecosystems are considered highly sensitive to disturbance, and threats from uncontrolled burning and gold-mining do exist. A number of national parks, e.g. Canaima, Jaua-Sarisariñama and Duida, in Venezuela, and Pico da Neblina, in Brazil, protect (at least on paper) large parts of the Tepuis EBA and, moreover, all lands above 800 m lying S of R Orinoco in Venezuela were recently declared national monuments, effectively placing almost entire range of this species within the protected-area system.

**Bibliography.** Braun *et al.* (2003), Cory & Hellmayr (1924), Hilty (2003a), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Parker (2003a), Phelps & Phelps (1947, 1963), Ridgely & Tudor (1994), Robbins (2003a), Sick (1993), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Willard *et al.* (1991), Zimmer (2003a).

## 42. Variable Antshrike

### *Thamnophilus caerulescens*

**French:** Batará bleuâtre **German:** Südlicher Tropfenameisenwürger **Spanish:** Batará Variable

**Taxonomy.** *Thamnophilus caerulescens* Vieillot, 1816, Paraguay.

Relationships uncertain; has been treated as forming a superspecies with *T. amazonicus*, but such a relationship considered unlikely. Complex plumage variation and unusual geographical distribution suggest that this species is a prime candidate for systematic study. Other described races seem indistinguishable or have plumage differences that appear to be clinal; thus, *subandinus* (N Peru) synonymized with *melanochrous*, *connectens* (EC Bolivia) with *dinellii*, *albonotatus* (EC Brazil) with nominate, and *pernambucensis* (NE Brazil) with *cearensis*. Documentation needed in order to establish whether any parapatry without intergradation exists among races listed below. Eight subspecies recognized.

#### Subspecies and Distribution.

*T. c. melanochrous* P. L. Selater & Salvin, 1876 - E slope of Andes in Peru (from Amazonas S of R Marañón S to N Puno).

*T. c. aspersiventer* d'Orbigny & Lafresnaye, 1837 - SE Peru (SE Puno) and WC Bolivia (N slope in La Paz, Cochabamba and Santa Cruz).

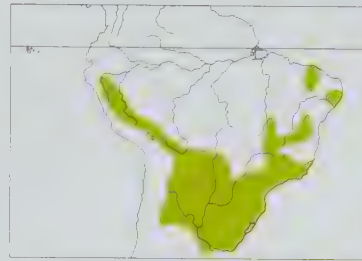
*T. c. dinellii* Berlepsch, 1906 - EC & S Bolivia on S & E Andean slopes (Santa Cruz S to Tarija), and NW Argentina (E slope from Jujuy S to La Rioja and, at lower elevations, E to Formosa and S to N Córdoba and Santa Fe).

*T. c. paraguayensis* Hellmayr, 1904 - SE Bolivia (lowlands of Santa Cruz), NW & NC Paraguay (W of R Paraguay and, to E, in Concepción, Amambay and San Pedro) and S Brazil (Mato Grosso do Sul). *T. c. gilviger* Pelzelin, 1868 - NE Argentina (E of R Paraná except Misiones), extreme SE Brazil (E Paraná and SE São Paulo S to Rio Grande do Sul) and Uruguay.

*T. c. caerulescens* Vieillot, 1816 - SE Paraguay (E of R Paraguay except Concepción, Amambay and San Pedro), extreme N Argentina (Misiones), and N part of SE Brazil (Minas Gerais and SE Bahia S to W Paraná, W & NE São Paulo and Rio de Janeiro).

*T. c. ochraceiventer* Sneath, 1928 - EC Brazil (S Tocantins, Goiás, Distrito Federal, SC Bahia). *T. c. cearensis* (Cory, 1919) - NE Brazil (Ceará, Pernambuco, Alagoas).

**Descriptive notes.** 14-16 cm; 15-24 g. Male nominate race has forehead and crown black, side of head grey, upperparts dark grey, mixed with black on lower back, white inter-scapular patch; outer scapulars edged white, wing-coverts black spotted white, flight-feathers blackish-brown, edged pale brown and white; tail brownish-black, tips white; underparts grey, belly paler, often with suggestion of scalloping. Female has crown and upperparts olive-brown with clay-coloured tinge, inter-scapular patch weak or absent, uppertail coverts edged yellow-brown, wing-coverts very dark



brown, edged white on tips, wings dark brown with clay-coloured edgings, tail dark brown with small white tips; throat and upper breast ochraceous-grey, rest of underparts cinnamon-tawny, breast and sides tinged olive. Subadult resembles female but more buffy. Race *melanochrous* is distinctive, mostly black, variably mixed with grey on rump and lower underparts, white wing edges mostly confined to primaries, tail spots small, female with black crown becoming olive-grey on forehead and nape, wing-coverts spots very small, lower underparts cinnamon-tawny; *aspersiventer* differs from previous in having lower underparts

scalloped black and white, tail spots larger, female with crown dark olive-grey with blackish spots; *dinellii* is paler than nominate, flight-feathers yellow-brown, underparts vary in darkness anteriorly and extent of cinnamon posteriorly, some in N part of range ("connectens") having blackish feathers on throat and breast, no cinnamon on belly, female with crown and upperparts ochraceous grey, throat and upper breast light grey with faint yellow tinge, pale cinnamon posteriorly (approaches previous in coloration in N of range); *paraguayensis* is pale, lower underparts entirely white or tinged buff, female with crown olive-grey (blackish spots in W), wing-coverts olive-grey with blackish subapical spots (in E) and white tips, white below with variable yellowish-brown tinge; *gilviger* has flight-feathers edged clay colour, grey of throat and breast extending to upper belly, lower underparts washed cinnamon-tawny, female with throat to upper belly yellowish-grey, lower underparts cinnamon-tawny; *ochraceiventer* has upperparts and flight-feathers tinged clay colour, throat grey, remaining underparts greyish ochraceous, female with black crown mixed with olive-grey on forehead; *cearensis* has less black on crown and upperparts, female with crown rufous, wing-coverts ochraceous olive-brown (edges brightest), tail tinged clay colour, throat pale ochraceous. **VOICE.** Loudsong a simple countable series of usually 6-7 plaintive, evenly spaced whistles of same pitch and intensity (rarely, introductory or final notes differ slightly in pitch or intensity), note shapes and pace variable, perhaps regionally. Call a single note, usually short and nasal, typically repeated in long sequences but at highly variable pace; also longer, softer note and raspy growl.

**Habitat.** Understorey and mid-storey of evergreen forest, second-growth woodland, and patches of thickets and trees in open regions. More a bird of forest edge, open viny woodland and dense thickets than of mature forest interior, and often persists in highly degraded remnant patches. In N part of Andean range (*melanochrous*, *aspersiventer*) inhabits thickets and undergrowth of humid forest, also dense stunted forest on low-elevation ridge crests, at 1200-2800 m; farther S in Andes and at lower elevations in NW Argentina (*dinellii*), found most often in dense undergrowth under patches of trees in woodlands of foothills and plains, especially in riparian scrubland and shrubby hillsides in canyons, at 200-2700 m. In the Chaco of Bolivia and Paraguay (*paraguayensis*) occupies patches of tall dense shrubs and low trees in riparian situations, as well as semi-deciduous scrub-forest, at 150-850 m. In NE Argentina, Uruguay and extreme SE Brazil (*gilviger*) restricted to thickest woods of all types, which most often found along banks of streams and in swampy areas, to 1050 m; farther N (*caerulescens*), especially common in vine-tangled zones of steep hillsides and also occurs in bamboo, vine tangles on streamside banks, dense second growth and, locally, *restinga* (low, dense, stunted forest off sandy beaches), to 1300 m. In the Planalto (*ochraceiventer*), inhabits gallery forest and small woodlots of the highlands, at 750-1350 m. In NE Brazil (*cearensis*) restricted to remnant patches of humid or semi-humid forest with abundant vines, to 850 m, and absent from immediately adjacent *caatinga* or dry-forest habitats.

**Food and Feeding.** Little published. Feeds primarily on insects, including moths and larval lepidopterans, katydids (Tettigoniidae), grasshoppers (Acrididae), mantids (Mantidae), stick-insects (Phasmatidae), true bugs (Hemiptera, Homoptera) and beetles (Coleoptera), as well as spiders and other arthropods; also seeds. A pair in Brazil (Rio de Janeiro) seen to consume three melastome (*Melastoma*) fruits; the birds severed the fruit at the base, swallowed it, then spat out what appeared to be a papery skin or husk. Also observed feeding on berries of mistletoe (Myrsinaceae). Forages in pairs or singly, 1-8 m above ground (mostly 1-5 m), often in more open situations than other antshrikes, but also working dense crowns of bamboo where these form interlacing mats of vegetation with crowns of understorey trees. Great individual variation in pace of foraging; often progresses deliberately by short hops separated by pauses of 3-15 seconds (typical of most antshrikes), but more frequently moves steadily and somewhat rapidly (pauses seldom more than 1-2 seconds) with series of small hops (none more than a few centimetres), looking about constantly and changing direction more frequently than most congeners; regardless of pace, seems to spend long periods of time thoroughly covering small areas. Reaches out, up or down, or lunges to glean prey from all leaf, stem, vine and branch surfaces, using quick bill-stabbing motions; also regularly makes short (15-40 cm) jumping horizontal or downward strikes to pluck items from tops of leaves, and vertical sallies of up to 1 m to hover-glean from underside of overhanging vegetation. Often creeps up lianas and investigates them for food. Occasionally forages less than 1 m from ground, usually clinging laterally to slender vertical stems and then pouncing on arthropods in leaf litter, before jumping back up to a perch to scan. Sometimes hops about slowly on ground, peering around. While foraging, habitually flicks wings and dips the tail slowly before rapidly flicking it upwards (applies to nominate, *dinellii*, *gilviger* and *cearensis*; no data on other races). Often joins mixed-species flocks, but just as frequently alone. Nominative race occasionally reported as following army ants (both *Eciton burchelli* and *Labidus praedator*).

**Breeding.** Oct-Feb in Brazil, Aug-Nov in Bolivia and Peru and Oct-Dec in Argentina. Nest of *dinellii* a well-woven cup, diameter 6 cm, depth 5 cm, made of fine grass leaves, stems and stalks, lined with thinnest stalks and horsehairs or similar fine rhizomorphs, suspended by rim (connecting points additionally bound by spider webs) from thin branches of horizontal fork 0.6-2.5 m above ground in bush; nests in Argentina (*gilviger* and nominate race) similar; one nest of nominate race in E Brazil (Espírito Santo) a pendant cup 8 cm high, 10 cm across, covered on outside with moss, some hanging 7.5 cm below nest, placed 1.8 m up in a *Tibouchina* bush at edge of road in tall second growth; in NE Brazil (*cearensis*) a deep purse-shaped cup, loosely woven (contents visible from below) with coarser grasses and plant fibres, lined with fine black, horsehair-like rhizomorphs, frequently green leaves or moss woven into exterior, suspended by rim from thin horizontal fork (fibres of nest looped over branches at three obvious points of attachment) among foliage in understorey sapling or broad-leaf shrub, often with overhanging large leaf a few centimetres above rim, 6 nests 0.7-7.5 m above ground. Clutch size known for nominate race, *cearensis*, *dinellii* and *gilviger*, normally 3 eggs, less often 2, creamy white with irregular (and individually variable) purplish-brown blotches, speckles, occasional streaks, sometimes also ash-grey spots (Argentina), markings mostly concentrated around larger end; incubation by both sexes during day, both also feed chicks, no information on incubation and nestling periods; Espírito Santo nest (nominate) held an apparently infertile egg and a nestling, egg pinkish-white with large red-brown



spots on larger end, a few elsewhere, male gradually left care of single nestling to the female. Nest sometimes parasitized by Shiny Cowbird (*Molothrus bonariensis*) in Argentina.

**Movements.** Ringing at a site in N Argentina (Salta) suggests some movement in S; presumed resident throughout remainder of range.

**Status and Conservation.** Not globally threatened. Fairly common over most of its extensive range, which includes a number of protected areas. This species' adaptation to edge habitats, second-growth woodland and other human-created habitats makes it less sensitive to disturbance. In Brazil, in a study of remnant woodland patches in Paraná which ranged in size down to 0.5 ha, this was the only antbird to survive in all 13 patches; similarly, it was the only thamnophilid among the most frequently observed bird species surviving in a eucalyptus (*Eucalyptus*) plantation in Minas Gerais. In NE Brazil, however, the conservation of race *cearensis* is of concern, since humid forest within its range has been largely reduced to remnant patches (e.g. Murici Ecological Reserve and Pedra Talhada State Park, in Alagoas) surrounded by sugar cane and other large-scale agricultural development. One stronghold of this race is the Serra de Baturité

region, which has been categorized as a Secondary EBA (Ceará Caatinga and Serras) and is home to two restricted-range species, the Ochraceous Piculet (*Picumnus limae*) and the Buff-breasted Tody-tyrant (*Hemitriccus mirandae*), that are classified as Vulnerable. The few remaining areas of humid and semi-deciduous forest habitats in the Baturité region are still being cleared, and are in need of protection.

**Bibliography.** Alabarce & Lucero (1977), Aleixo & Vielliard (1995), Alverson *et al.* (2001), dos Anjos (1990, 2001a), dos Anjos & Boçon (1999), Belton (1985), Bencke & Kindel (1999), Cândido (2000), Christiansen & Pitter (1989), Cory & Hellmayr (1924), Cuervo & Gerzenstein (1962), Di Giacomo (2001), Eisentraut (1935), Ejlsdå & Krabbe (1990), Fraga & Narosky (1985), Hartert & Venturi (1909), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Krügel & dos Anjos (2000), Machado & Lamas (1996), Maldonado-Coelho & Marini (2000), Motta-Júnior (1990), Naumburg (1937), Oniki & Willis (1999b), Parker (2003a), de la Peña (1988), Pineschi (1990), Ridgely & Tudor (1994), Schmitt *et al.* (1997), Schönwetter & Meise (1967, 1988), Selater & Hudson (1888), Sick (1993, 1997), da Silva & Oniki (1988), Stotz *et al.* (1996), Wetmore (1926), Willis (1984d), Zimmer, J.T. (1933b), Zimmer, K.J. (2003a), Zotta (1936).







PLATE 47

inches 3  
cm 8



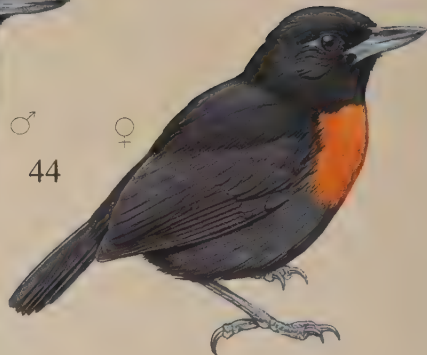
*ssp occipitalis*



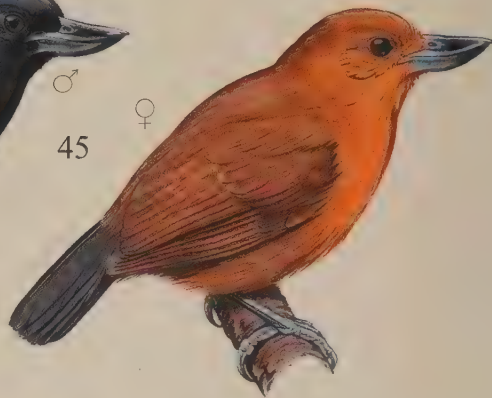
*ssp stellaris*



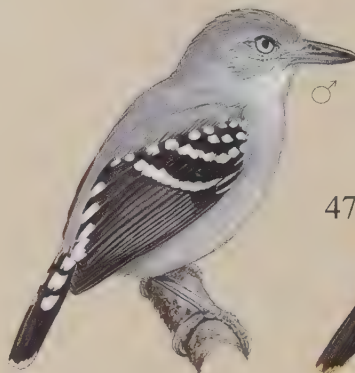
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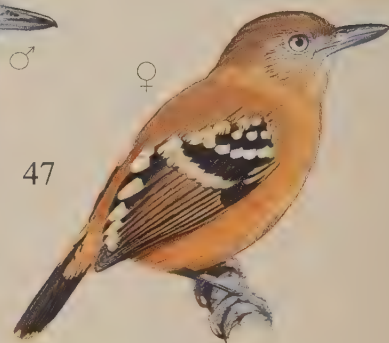
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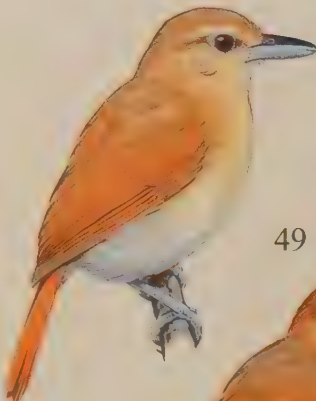
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47



48



49



*ssp rufescens*



*ssp anabatimus*

*ssp coronatus*



*ssp aequatorialis*



## Genus *PYGIPTILA* P. L. Sclater, 1858

### 43. Spot-winged Antshrike

#### *Pygiptila stellaris*

**French:** Batará étoilé **German:** Fleckenflügel-Ameisenwürger **Spanish:** Batará Estrellado

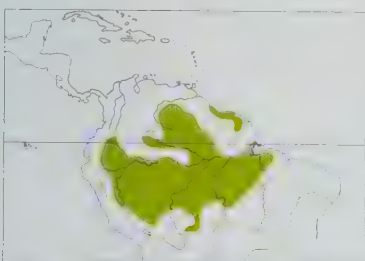
**Taxonomy.** *Thamnophilus stellaris* Spix, 1825, Pará, Brazil.

Relationships uncertain. Genetic studies indicate that genus is not closely related to *Thamnophilus*, but perhaps closest to the "stipple-throated assemblage" of *Myrmotherula* antwrens; it is, nevertheless, maintained in its traditional position in the taxonomic sequence, pending further study. Described plumage variation of forms *maculipennis* (S Colombia and NE Peru) and *purusiana* (W Brazil) appears to be clinal; these forms, therefore, merged with nominate, but further study required. Two subspecies recognized.

#### **Subspecies and Distribution.**

*P. s. occipitalis* J. T. Zimmer, 1932 - S Venezuela (W & S Bolívar, Amazonas), N Brazil (N Amazonas, Roraima, NW Pará) and adjacent extreme E Colombia, and NE & extreme S Guyana, coastal Surinam and, locally, W & C French Guiana.

*P. s. stellaris* (Spix, 1825) - extreme S Colombia (near base of Andes), E Ecuador and NE & E Peru E through S Amazonian Brazil (S to Rondônia, N Mato Grosso, S Pará, W Maranhão), and S to NW & NE Bolivia.



**Descriptive notes.** 12-13 cm; 23-27 g. Bill heavy; tail short; white interscapular patch. Male has black crown; otherwise grey, darker above, except for some black feathers on centre of back, white spots on wing-coverts. Female has crown, upperparts, tertials and tail grey, faintly tinged clay colour, especially on forehead, with remiges (except tertials) and wing-coverts cinnamon-tawny, head side and underparts pale clay colour, palest on throat, tinged grey on flanks and crissum; S of R Amazon, upperparts deeply tinged clay colour in W ("*maculipennis*"), becoming greyer, apparently clinally, to E. Race *occipitalis* is

darker than nominate, especially below, female with ochraceous forehead more clearly demarcated from grey crown. **VOICE.** Loudsong rather short (e.g. 1-2 seconds), uncountable series of evenly spaced abrupt notes, increasing in intensity and declining slightly in pitch, immediately followed by long whistle usually rising and falling slightly in pitch. Calls include sharp "chak", often intermixed with downslurred whistle which may be short (e.g. 0-3 seconds) and sharply downslurred (e.g. dropping from 5 to 2 kHz) or longer (e.g. 0-7 seconds) and flatter, pitch variable.

**Habitat.** Canopy and subcanopy of lowland evergreen forest, to 700 m. Occurs in both *terra firme* and seasonally flooded forest, and also in adjacent tall second growth, particularly in viny, leafy strata.

**Food and Feeding.** Feeds on variety of lepidopteran larvae, also orthopterans, particularly large katyids (Tettigoniidae), mantids (Mantidae), and stick-insects (Phasmatidae), beetles (Coleoptera), hemipteran bugs, and other insects; observed eating small frog. Forages in pairs, individually, or in family groups, moving actively along thin branches and through vegetation by short, heavy hops, frequently pausing for 1-2 seconds (occasionally to 10 seconds) to scan for prey; frequently puts on sudden burst of speed and scoots along branches or vines with series of closely spaced short hops; sometimes jumps into foliage clusters with beating wings as if to dislodge insects. Routinely hangs upside-down from tips of leafy outer branches or from dead-leaf clusters, sometimes for several seconds, clinging with feet and stretching neck to fullest extent to glean prey, sometimes spreading one wing and flattening it to the substrate for balance. In this manner, often probes curled dead-leaf clusters for several seconds at a time, sometimes tearing clusters apart with its bill; in 338 observations of feeding in Peru and Bolivia, dead leaves comprised 58% of foraging substrates, and same study indicated that dead-leaf foraging was height-dependent, with dead leaves searched more frequently when birds foraged in understorey and subcanopy than when in canopy. Also peers under branches in the manner of many tanagers (*Tangara*). Forages mostly 7-25 m above ground, concentrating on vine tangles, including clusters of hanging vines and philodendrons (*Philodendron*) along trunks, and terminal leafy branches, particularly on larger leaves; seems selectively to inspect leaves with obvious insect damage. Sometimes forages much lower (particularly in *várzea* or *igapó*), occasionally to near ground. Usually encountered in company of mixed-species flocks in mid-storey to canopy, although not considered a nuclear species of such flocks. Occasionally attends swarms of army ants (*Eciton burchelli*) passing through; then descends to near ground level.

**Breeding.** Little known. One previously unpublished description of nest-building in Brazil in Nov, also juvenile male following adult male in a flock in Nov, both in Belém area of Brazil; a nest in SE Peru in Sept. Nest built by both sexes, composed almost entirely of large leaves (some bigger than the bird) piled on top of one another (resembling a *Thamnomanes* nest), from the side appearing triangular in shape, lined with finer material (either roots or smaller leaves), placed c. 4-5 m above ground in mass of converging branches near top of small tree; building bird adds a leaf to nest, then sits in it to shape it.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Considered to be generally common throughout most of its extensive range. This includes a number of large parks and reserves in most countries in which it occurs: examples are Yapacana and La Neblina National Parks, in Venezuela, Amacayacu National Park, in Colombia, Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve, Tambopata-Candamo Reserved Zone and Pacaya-Samiria National Reserve, in Peru, Serra do Divisor, Jaú and Tapajós National Parks, Cristalino State Park and Caxiuanã National Forest, in Brazil, and Madidi National Park, in Bolivia. Range also encompasses extensive, intact habitat which, although not formally protected, is at little short-term risk of development.

**Bibliography.** Cory & Hellmayr (1924), Foster *et al.* (1994), Hackett & Rosenberg (1990), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a, 2003b), Isler, P.R. & Whitney (2002), Munn & Terborgh (1979), O'Neill & Pearson (1974), Oniki & Willis (1983b), Oren & Parker (1997), Parker (2003a), Parker & Bailey (1991), Remsen (2003b), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Rosenberg (1997), Schubart *et al.* (1965), Sibley & Ahlquist (1985), Sick (1993), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Tallman & Tallman (1994), Terborgh *et al.* (1990), Thiollay (1994), Tostain *et al.* (1992), Willis (1984d), Zimmer, J.T. (1932e), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997).

## Genus *NEOCTANTES* P. L. Sclater, 1869

### 44. Black Bushbird

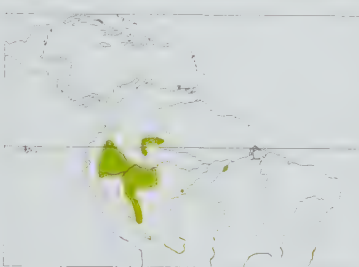
#### *Neoctantes niger*

**French:** Batará des fourrés **German:** Schwarzer Bodennameisenwürger **Spanish:** Batará Arbustero

**Taxonomy.** *Xenops niger* Pelzeln, 1859, Marabitanas, Amazonas, Brazil.

Relationships uncertain. Monotypic.

**Distribution.** Extreme SC & E Colombia (Putumayo, Vaupés, N Amazonas), E Ecuador, N & SE Peru (N Amazonas, Loreto, Cuzco, Madre de Dios) and W Amazonian Brazil (extreme NW & SW Amazonas, W Acre; also isolated records from W bank of middle R Madeira and W Pará).



**Descriptive notes.** 15-16 cm; 29-32 g. Lower mandible upturned; white interscapular patch. Male is entirely black. Female is sooty black, with rufous on breast, side and central upper belly. **VOICE.** Loudsong = countable (e.g. rate of 9 notes in 5 seconds) series of short, slightly upslurred whistles, all identical and at same pitch, although initial note often softer, duration highly variable, usually 15 or more notes but sometimes continuing for several minutes; male and female sometimes sing simultaneously, with female immediately after male, possibly a duet. Call distinctive, squealing, two-parted but continuous, with

second part lower-pitched.

**Habitat.** Understorey of lowland evergreen forest and adjacent second growth, to 750 m. Occurs in both *terra firme* and *várzea* forest (probably more common in latter), particularly in dense undergrowth around treefalls, light-gaps, and along swampy forest streams that are rank with *Heliconia*, ferns, fallen logs, sawgrass and viny thickets.

**Food and Feeding.** Little published. Assumed to feed on various insects, perhaps also other arthropods. Most witnessed prey captures have involved items too small to be identified; a male in Brazil was seen to extract a large, pale cricket (Gryllidae) from inside a suspended, curled dead leaf. Pairs or individuals forage in dense thickets, 0-10 m above ground, progressing by short hops, separated by pauses of 2-10 seconds to scan; advances through vine tangles, often hitching sideways, sitting with the body positioned perpendicular to the limb or vine, and with fairly upright posture. Occasionally probes in suspended, curled dead leaves, but most surface manoeuvres involve picking at vine and branch surfaces (not seen to pick at live leaves). Regularly employs subsurface foraging techniques, using the bill to hammer repeatedly at a branch, woody vine, palm rachis or rotten log until a hole is opened; then uses the uniquely shaped bill as a wedge to pry loose strips of live bark or stem fibres, or to flake off dead bark, afterwards picking repeatedly at small subsurface prey, which are swallowed without special manipulation. Frequently remains at a single station for 10 minutes or more. May occasionally associate loosely with mixed-species flocks passing through its territory.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. A low-density species that is not well known; considered rare to locally uncommon throughout its range. Its secretive nature, coupled with its preference for dense light-gap vegetation, makes it easily overlooked in anything other than intensive surveys; its abundance may, therefore, be generally underestimated. Much of the range of this species is relatively inaccessible, with vast areas of intact habitat, including in such protected areas as Yasuni National Park, in Ecuador, Serra do Divisor and Jaú National Parks, in Brazil, and Manu National Park and Biosphere Reserve, in Peru.

**Bibliography.** Álvarez (1994), Cory & Hellmayr (1924), Hilty (2003b), Hilty & Brown (1986), Isler & Whitney (2002), Parker (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Sick (1993), Stotz *et al.* (1996), Tallman & Tallman (1994), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Zimmer, J.T. (1931a), Zimmer, K.J. (2003a).

## Genus *CLYTOCTANTES* Elliot, 1870

### 45. Recurve-billed Bushbird

#### *Clytoctantes alixii*

**French:** Batará à bec retroussé

**German:** Grauer Bodennameisenwürger

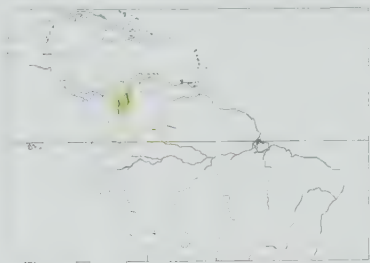
**Spanish:** Batará Piquicurvo



**Taxonomy.** *Clytoctantes alixii* Elliot, 1870, "Rio Napo, Ecuador"; presumed error, locality unknown.

Relationships uncertain. Specimens on which original description was based were apparently labelled from "Equateur", but there is no satisfactory evidence that the species has ever occurred in Ecuador. Monotypic.

**Distribution.** NW Venezuela (Sierra de Perijá) and N Colombia (N end of the three main Andean ranges in César, Córdoba, Bolívar, Antioquia and Santander; one record from E slope of middle C range in Caldas).



**Descriptive notes.** 16-17 cm. Lower mandible strongly upturned; white interscapular patch. Male is dark grey, with loreal region, throat and centre of upper breast black, flight-feathers brownish-black, wing-coverts with tiny pale tips. Female has crown and upperparts dark rufous-brown, blackish on wings and tail, small pale rufous tips of wing-coverts, underparts reddish-brown, darker on flanks and crissum. Subadult male is dark yellowish and blackish-brown, forehead, head side and throat reddish yellow-brown, wing coverts dotted white. VOICE. Very little known. In Colombia, a female was recorded as giving a chirring

"ke'e'e'ew", reminiscent of voice of *Phaenostictus mcleannani*.

**Habitat.** Understorey of evergreen forest, forest edge, adjacent second growth, and regenerating clearings, apparently primarily in foothills; Venezuelan records between 300 m and 1200 m, Colombian records from 200 m to 1150 m. Seemingly favours dense vine tangles and thickets near the ground, as in treefalls, overgrown clearings and forest borders.

**Food and Feeding.** Almost nothing known. Among the few observations are one of a bird attending an army-ant swarm, and another of an individual stripping strands from dead stems in search of insects.

**Breeding.** Virtually nothing known. In W of range, breeding reported to occur in Apr-May.

**Movements.** Presumed resident.

**Status and Conservation.** **ENDANGERED.** Restricted-range species; present in Nechi Lowlands EBA and Colombian East Andes EBA. Known from only a few localities, with no records since 1965. Political instability throughout range in which it occurs has prevented any recent surveys; such surveys are urgently needed in order to assess current distribution and population size, as well as habitat requirements. The regions from which this species has been recorded have suffered extensive deforestation in recent decades, primarily for human settlement, cattle-ranching, and coca production, but there is some indication that it may survive and/or thrive in dense second growth. Two existing large national parks, Sierra de Perijá National Park, in Venezuela, and Paramillo National Park, in Colombia, could conceivably harbour populations of this species.

**Bibliography.** Avelado & Pons (1952), Carriker (1955), Chapman (1917, 1926), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), Haffer (1975), Hilty (2003a), Hilty & Brown (1986), Meyer de Schauensee & Phelps (1978), Phelps & Phelps (1963), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stiles *et al.* (1999), Stotz *et al.* (1996), Willis (1988b).

## 46. Rondonia Bushbird

### *Clytoctantes atrogularis*

**French:** Batara du Rondonia

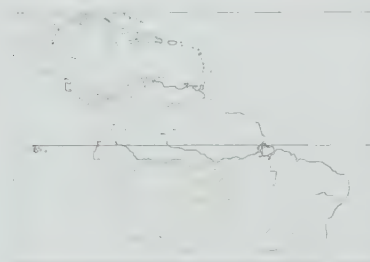
**Spanish:** Batará de Rondonia

**German:** Mato Grosso-Bodenameisenwürger

**Taxonomy.** *Clytoctantes atrogularis* Lanyon *et al.* 1990, Cachoeira Nazaré, Rondônia, Brazil.

Relationships uncertain. Monotypic.

**Distribution.** Rondônia, in SW Amazonian Brazil; known only from the type locality, on W bank of R Jiparaná.



**Descriptive notes.** 17 cm; 31 g. Lower mandible strongly upturned; bill very heavy. Male is entirely black. Female has anterior upperparts and auriculars chestnut, interscapular patch white, remaining upperparts brown, becoming grey on uppertail-coverts; remiges dark greyish-brown, edged chestnut-brown, wing-coverts dark chestnut with paler edges, tail black; throat, malar region and upper breast black, lower breast, sides and belly light chestnut, flanks grey with chestnut tips, crissum grey. VOICE. Male said to deliver a very loud, trilled whistle, "tree-tree-tree", at irregular intervals.

**Habitat.** Lowland humid *terra firme* forest dominated by dense vine tangles.

**Food and Feeding.** Little information available. Only two observations: first was of a male c. 1 m above ground in area of large treefall, where it worked up to 2-5 m in a vine tangle, pounding and digging at vines with its bill; second, brief observation was of a male 4 m up in a dense vine tangle.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** **CRITICAL.** Known from only a single adult female specimen and sightings of two males in the same area, all in 1986. Since only one individual was mist-netted during 1450 net-days and only two others were seen during 1400 hours of fieldwork by five experienced observers, this species is presumably very rare and local; an additional 375 net-days and 250 field hours at a similar site 70 km away produced no further observations. Systematic survey work in Rondônia (and adjacent areas of Amazonas and Mato Grosso) is urgently needed in order to locate any additional sites where this species may occur. Deforestation in this part of Amazonia is currently proceeding at a rate of some 4000 km<sup>2</sup> per year, placing this and other Rondônia endemics at extreme risk. Subsequent to the discovery of this bushbird, a hydro-electric dam was constructed at the type locality.

**Bibliography.** Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Lanyon *et al.* (1990), Ridgely & Tudor (1994), Sick (1993), Stattersfield & Capper (2000), Stotz *et al.* (1996), Zimmer, Parker *et al.* (1997).

## Genus *MEGASTICTUS* Ridgway, 1909

### 47. Pearly Antshrike

#### *Megastictus margaritatus*

**French:** Batara perlé

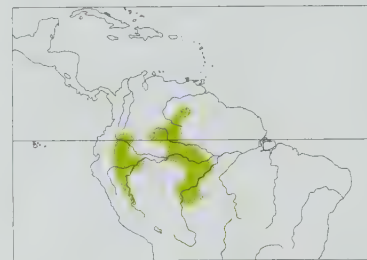
**German:** Kurzschnanz-Ameisenwürger

**Spanish:** Batará Perlado

**Taxonomy.** *Myrmeciza margaritata* P. L. Slater, 1855, Chamicuro, Loreto, Peru.

Relationships uncertain. Monotypic.

**Distribution.** Locally in S Venezuela (SW Bolívar, S Amazonas), extreme E & S Colombia (Guainía, Vaupés, Caquetá), E Ecuador, NE & EC Peru (Loreto, Ucayali) and WC Amazonian Brazil (NW & SC Amazonas, N Rondônia).



**Descriptive notes.** 12-13 cm; 18-21 g. Male has crown and upperparts grey, wings and tail black, wing-coverts and tertials with large rounded spots at tips, uppertail-coverts and tail tipped white; underparts pale grey, whitest on chin, throat and centre of belly. Female has crown and upperparts yellowish-brown, crown tinged blackish, wing-coverts, tertials, tail-coverts and tail spotted like male except spots pale buffish, flight-feathers edged ochraceous, underparts ochraceous with cinnamon tinge, palest on throat and centre of belly. VOICE. Loudsong 2-3 slowly delivered whistles, slurred up and down, followed by 6-7 flat raspy

notes at much faster pace, total length c. 2-5-3 seconds. Call whistled, upslurred "wheet" notes, repeated in groups of 2-3, as alarm or as contact between mates; also a hard rattle in agonistic situations.

**Habitat.** Understorey of lowland evergreen forest and adjacent older second-growth woodland, mostly below 500 m; to 1250 m in tepui region of S Venezuela. Probably more common in regions with sandy soil. Also noted along edges of lagoons.

**Food and Feeding.** Little published. Feeds on insects, including adult and larval lepidopterans, katydids (Tettigoniidae), grasshoppers (Acrididae), mantids (Mantidae) and stick-insects (Phasmatidae), as well as other arthropods, such as spiders. Forages in pairs, singly, or in family groups (up to 4 individuals), 1-10 m above ground, mostly at 2-6 m, clinging laterally to slender vertical stems or sitting upright on more horizontal branches; frequently swings tail from side to side in somewhat jerky, pendulum-like motion, or flicks it rapidly upwards in arc of 30-45 degrees, and occasionally flicks the wings. Progresses by a series of short hops of 7-30 cm in rapid succession, separated by pauses of 2-30 seconds to scan for prey. Prey taken primarily by three methods: diagonal sally-gleans of 1-5-4 m, usually upward-directed to underside of a green leaf, and then continuing on to another perch without stopping (75% of all manoeuvres recorded); aerial sallies to take flying prey in mid-air, again continuing on to another perch; and hover-gleans, involving a vertical sally to underside of overhanging vegetation and fluttering briefly to glean items. Foraging methods much like those of *Thamnomanes* antshrikes. When actively hopping (as opposed to pausing at scanning stations), also commonly lunges or pounces to glean prey, usually from upper surfaces of leaves. Sometimes associates loosely with mixed-species flocks.

**Breeding.** Nothing published. Nesting recorded in Aug in Brazil. A nest in Brazil (Borba, in Amazonas) was an open cup with diameter 8 cm externally, 5-7 cm internally, outside depth at shallowest end 6 cm, at deepest end 11 cm, loosely woven (contents visible from below) from plant fibres, rootlets, some twigs and numerous dead leaves, suspended by rim with plant fibres and spider webs (three points of attachment) from diagonal fork 65 cm up in understorey sapling; at bottom of cup two large dead leaves were woven in and left hanging, giving appearance of messy organic debris lodged in the sapling fork, and another mass of dead leaves formed a canopy several centimetres above cup. Clutch 2 eggs, creamy white, with variable amounts of maroon-brown blotching, streaking and network of lines heavily concentrated at larger end; male observed incubating at midday.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. A low-density species that is seemingly rare to locally uncommon at most locations throughout its range. Distribution appears to be somewhat patchy, with numerous records from a few widely scattered areas, such as Lagarto (upper R Ucayali, in Peru), Borba (Brazil) and São Gabriel da Cachoeira (upper R Negro, in Brazil), yet no records from many similar areas in between. Appears to survive, although at lower densities, in partially logged areas. Existence of vast areas of relatively inaccessible, intact, and seemingly suitable habitat should guarantee that this species is not at risk. Almost nothing is known of its ecological requirements and micro-habitat preferences, however, nor are the reasons for its apparent rarity and patchy distribution understood. Efforts should be made to fill in these gaps, thereby allowing more informed assessment of its true numerical status and conservation priorities for the species.

**Bibliography.** Álvarez (1994), Alverson *et al.* (2001), Cory & Hellmayr (1924), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Johns (1991), Paz y Miño (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schönwetter & Meise (1967), Sick (1993), Stotz *et al.* (1996), Whitney & Rosenberg (1993), Zimmer, J.T. (1932c), Zimmer, K.J. (2003a).

## Genus *XENORNIS* Chapman, 1924

### 48. Speckled Antshrike

#### *Xenornis setifrons*

**French:** Batará masqué

**German:** Strichelrücken-Ameisenwürger

**Spanish:** Batará Moteado

**Other common names:** Speckle-breasted/Spiny-faced Antshrike, Grey-faced Antshrike/Antbird

**Taxonomy.** *Xenornis setifrons* Chapman, 1924, Tacarcuna, 2050 ft [c. 625 m], Darién, Panama.



Relationships uncertain; possibly closest to *Thamnomanes* or *Megascictus* species on basis of similarities of posture, tail movements, foraging behaviour within mixed-species flocks, and some vocalizations. Monotypic.

**Distribution.** E Panama (E from Colón) and extreme NW Colombia (Chocó).



**Descriptive notes.** 15-16 cm; 25 g. Male is olive-brown above, all but rump feathers edged blackish, giving spotty appearance; wings dark brown, spotted and edged light reddish yellow-brown; tail blackish-grey, tips of outer rectrices paler; forehead, side of head and underparts dark grey, spotted pale grey on throat and breast. Female has upperparts like male but slightly paler, forehead like crown, side of head brown with lighter spotting, throat whitish-olive with blackish-brown spots; underparts light olive-brown, breast feathers with blackish edgings giving spotty appearance, flanks and crissum darker.

**Voice.** Male loudsong a short, countable series (e.g. 9 notes, 2-8 seconds) of whistles, rising in pitch in even steps, notes at both ends of series weaker and shorter, little space between notes; female loudsong shorter, lower-pitched, rising less in pitch. Call a series of 2-5 loud, abrupt "chak" notes repeated rapidly, occasionally given singly.

**Habitat.** Understorey of undisturbed wet and humid lowland and foothill evergreen forest, at 150-800 m, mostly above 350 m. Found mainly on flat areas at bottoms of ravines with semi-open canopy, many epiphytes and lianas, and dense understorey that often contains many palms; also occasionally on steep slopes below ridges.

**Food and Feeding.** Feeds on various insects and other arthropods. In Nusagandi region of Panama, typically encountered as closely associated pair-members, usually with mixed-species flocks of which other core members include *Myrmotherula axillaris* and *M. fulviventr* and Tawny-faced Gnatwren (*Microbates cinereiventris*). May function as a flock-leader within mixed flocks, in manner of *Thamnomanes* antshrikes (tape playback of its voice attracts other species in locations where present species is known to occur). Forages mostly 0.5-2.5 m above ground, sometimes as high as 5 m, perching on thin vertical stems and vines as well as horizontal perches, often in fairly open areas, from where it scans for prey; scanning periods 2-60 seconds, usually c. 20 seconds between perch changes. Attack manoeuvres are various types of sally to live vegetation, typically laterally or upward-directed and less than 1 m in distance, but occasional sallies of 2 m or more. Prey most often gleaned from tips and upper surfaces of leaves, particularly of palms.

**Breeding.** Two nests found in May in Panama (San Blas). Both cup-shaped, external measurements 11-12 cm deep, 14 cm wide, constructed entirely of rootlets and looking from outside like tangled mass, the rim bound to branch fork 2-8-3 m up in tree (one tree 3-5 m tall, other 9 m tall) at edge of stream in steep ravine adjacent to dense tangle (possibly resulting from landslide). Clutch probably 2 eggs, lilac, heavily marked with fine dark purple scrawls, broad ring of deep purple on wider end; one nest apparently preyed upon, at the other the two nestlings were fed by both parents, food including green lepidopteran larvae.

**Movements.** Presumed resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Darién Lowlands EBA. Recorded rarely and from just a few localities within a relatively tiny range. The only documented Colombian records are from one locality beside R Baudó, on lower slopes of Serranía de Baudó, in 1940. In Panama, most records since 1980 have come from just a few sites, particularly from Cerro Jefe and Cerro Azul (Panamá), from the 40,000-ha forest reserve centred around the Kuña Indian Reserve at Nusagandi (San Blas), where the species was judged to be fairly common but often inconspicuous, and from Cerro Pirre (Darién); also recorded from Chagres National Park and, probably, Portobelo National Park. While possibly long overlooked in some areas before its voice became known, the species does appear to have a genuinely patchy distribution. Much seemingly suitable habitat is assumed to be intact on both sides of the relatively undeveloped border between Darién and Colombia, particularly in Darién National Park (597,000 ha, also a World Heritage Site), Los Katios National Park (72,000 ha) and Ensenada de Utría National Park (c. 50,000 ha). Habitat also exists on the Caribbean slope of San Blas, but deforestation is severe and ongoing; unless determined measures are taken, it is likely that these forests will be cleared. Mining, completion of the Pan-American highway and human settlement considered the primary threats to the habitat. More surveys are needed in order to locate any additional populations of this antshrike, preferably within the large national parks noted above.

**Bibliography.** Adsett & Wege (1998), Álvarez-Cordero *et al.* (1994), Angehr & Jordan (1998), Christian (2001), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Dunning (1993), Engleman (1992, 1993), Hilty & Brown (1986), Isler & Whitney (2002), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wetmore (1972), Whitney & Rosenberg (1993), Willis (1984e).

## Genus *THAMNISTES* P. L. Sclater & Salvin, 1860

### 49. Russet Antshrike

#### *Thamnistes anabatinus*

**French:** Batararousset

**German:** Rostbrauner Ameisenwürger

**Spanish:** Batará Café

**Taxonomy.** *Thamnistes anabatinus* P. L. Sclater and Salvin, 1860, Choctum, Alta Verapaz, Guatemala. Relationships uncertain. Races *gularis*, *aequatorialis* and *rufescens* possibly form a separate species; molecular and vocal analyses needed. Plumage differences between some races probably clinal. Seven subspecies recognized.

#### Subspecies and Distribution.

*T. a. anabatinus* P. L. Sclater & Salvin, 1860 - Atlantic slope of SE Mexico (E Oaxaca, Tabasco, Chiapas), Guatemala, Belize and Honduras.

*T. a. saturatus* Ridgway, 1908 - Nicaragua (Atlantic slope), Costa Rica (both slopes except NW Pacific) and extreme W Panama (W Chiriqui, W Bocas del Toro).

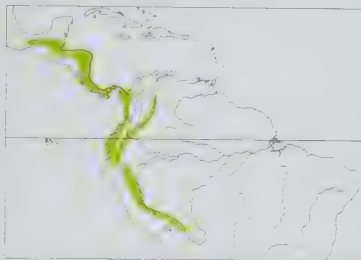
*T. a. coronatus* Nelson, 1912 - Panama (except extreme W) and NW Colombia (Atlantic slope in Córdoba).

*T. a. intermedius* Chapman, 1914 - Pacific slope in W Colombia and Ecuador.

*T. a. gularis* Phelps, Sr. & Phelps, Jr., 1956 - extreme NW Venezuela (Táchira), possibly extending into NE Colombia.

*T. a. aequatorialis* P. L. Sclater, 1862 - E Andean foothills in Colombia (except perhaps NE), Ecuador and extreme N Peru (N of R Marañón in N Amazonas).

*T. a. rufescens* Cabanis, 1873 - E Andean foothills from Peru (S of R Marañón) S to W & C Bolivia (La Paz, Cochabamba).



**Descriptive notes.** 13-15 cm (W of Andes), 15-16 cm (E of Andes); 19-23 g. Male nominate race has forehead, centre of crown and upperparts olive-brown, supercilium olive-yellow, line through eye dusky, auriculars pale olive-brown; interscapular patch cinnamon to orange-rufous; wings cinnamon-rufous, tail rufous; throat and underparts pale yellowish-olive, flanks and crissum olive. Female lacks orange interscapular patch. Races W of Andes have bill and body proportionately heavy, those E of Andes are slimmer and longer-tailed; *saturatus* is slightly darker than nominate; *coronatus* has crown rufescent, contrasting

with back, underparts yellow; *intermedius* differs from last in being slightly darker, interscapular patch with some blackish subapical spots; *aequatorialis* has crown very dark olive-brown, upperparts olive-brown, interscapular patch orange-rufous with black subapical spots, throat and side of head olive-yellow, underparts olive; *gularis* resembles last but throat less yellow, more ochre; *rufescens* has crown and upperparts paler, interscapular patch lacking black spots, supercilium, side of head and underparts bright ochraceous, lower underparts tinged olive. **Voice.** Loudsong W of Andes a short, countable series (e.g. 6 notes, 2 seconds) of abrupt downslurred notes that fall in pitch, preceded by abrupt lower-pitched softer note; E of Andes a short (e.g. 1-8 seconds) trill that mostly rises in pitch and slows down. Calls W of Andes include variable short, thin "weep" notes with pitch sharply rising and falling, strung together in doublets and triplets and in combination with downslurred squeal; also short harsh notes.

**Habitat.** Canopy and subcanopy of montane and nearby lowland evergreen forest, and adjacent tall second growth; also in transitional (semi-humid) forest in Pacific lowlands of Costa Rica (*saturatus*). Primarily in foothills, but some populations ranging down to sea-level; to 1700 m, mostly below 400 m in N (nominate).

**Food and Feeding.** Feeds mostly on insects, including beetles (Chrysomelidae, Cerambycidae, Curculionidae, Carabidae), true bugs (Hemiptera, including Pentatomidae), katydids (Tettigoniidae), crickets (Gryllidae), cicadas (Cicadidae) and bees (Apidae), and other arthropods, particularly spiders. Also observed eating fruit in canopy. Pairs or individuals forage mostly from mid-levels up to canopy (8-25 m above ground), but often lower, particularly at forest edge. Pair-members tend to forage unusually close together for a thamnophilid, almost always in the company of mixed-species subcanopy flocks of other insectivores, progressing by short hops at variable pace; sometimes very active, with almost no pauses, at other times more deliberate, pausing 1-5 seconds between hops. On flying to a new tree, often works its way up from mid-levels along hanging vines near the trunk, then takes a horizontal path out to slender terminal branches, before flying to another tree. Perch-gleans items from live leaves (particularly from top surfaces), stems and vines, using quick bill-stabbing motions and lunges, concentrating search in terminal outer foliage and in philodendrons (*Philodendron*) clinging to vertical trunks; frequently inspects leaf petioles, also frequently cranes its neck and leans (hanging by feet) to peer under leaves, sometimes hanging acrobatically like a tit (Paridae) from larger leaves; regularly inspects suspended, curled dead leaves (but also passes these by), delicately probing or, equally often, tearing them apart noisily with the bill. In Ecuador, frequently probes suspended clusters of moss, often by hanging over to reach them. An individual moving with a mixed-species mid-level flock in Costa Rica was observed to attend army ants (*Eciton burchelli*): it descended to 60 cm over periphery of swarm, and alternately hopped back and forth from a slender trunk to a hanging vine several centimetres away, working its way up to 3 m before flying to a nearby shrub 1 m above ground, opportunistically perch-gleaning or lunging for arthropods fleeing the ants, taking them from branches and the top surfaces of leaves; eventually worked up to 5 m above ground before flying away.

**Breeding.** Apr-Jun in Costa Rica. Nest built by both sexes, a deep cup composed mostly of dead leaves bound together by fine, dark fungal rhizomorphs, suspended by rim in horizontal fork, the points of attachment reinforced by spider webs or cocoon silk, 7-15 m up in tree at forest edge or in semi-open. Normal clutch 2 eggs, dull white, speckled with brown; both sexes brood and feed nestlings.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout its extensive range. No immediate threats have been noted, although the foothill/mid-elevation forests inhabited by this species throughout much of its range are under threat of deforestation for logging and agriculture, and it is conceivable that some races could be at risk if current trends continue.

**Bibliography.** Cody (2000), Cory & Hellmayr (1924), Foster *et al.* (1994), Greenberg & Gradwohl (1980), Hilty (1997, 2003a), Hilty & Brown (1986), Howell & Webb (1995a), Isler & Whitney (2002), Karr (1971a), Monroe (1968), Parker (2003a), Parker & Carr (1992), Rasmussen *et al.* (1996), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Schulenberg & Awbrey (1997a), Skutch (1969c, 1981), Slud (1964), Stiles & Skutch (1989), Stotz *et al.* (1996), Wetmore (1972), Whitney (2003a), Whittaker (2003a), Willis (1984e), Zimmer, J.T. (1932f), Zimmer, K.J. (2003a).



inches 3  
cm 8





# Genus *DYSITHAMNUS* Cabanis, 1847

## 50. Spot-breasted Antvireo

### *Dysithamnus stictothorax*

**French:** Batara tachet **German:** Fleckenbrustwürgerling **Spanish:** Batarito Pechipinto

**Taxonomy.** *Myothera strictothorax* [sic] Temminck, 1823, Bahia, Brazil. Relationships of genus not clearly established; preliminary molecular evidence suggests affiliation with *Thamnophilus*, and morphological characteristics have connected it with *Thamnomanes*. Present species and *D. mentalis*, *D. striaticeps*, *D. puncticeps* and *D. xanthopterus* appear to form a monophyletic group to which other species placed in the genus are probably closely related. Monotypic.

**Distribution.** SE Brazil in coastal region from S Bahia S to Santa Catarina, extending inland in Minas Gerais (R Doce region) and São Paulo, and NE Argentina (Misiones).



**Descriptive notes.** 12 cm. Male has forehead and crown dark grey, auriculars blackish, white spots on side of head; upperparts greyish-olive, concealed white patch under scapulars; wings blackish, wing-coverts tipped white, flight-feathers broadly edged chestnut-rufous; tail rufous-olive, narrowly tipped white; throat and upper breast white, rest of underparts yellowish, greyer on sides, large dark spots on breast; iris reddish. Female differs from male in chestnut crown, more olive (less grey) upperparts, no white patch under scapulars, less spotting below. **VOICE.** Loudsong a series of rapidly delivered musical notes (e.g. 16 notes,

2-4 seconds) rising and falling in pitch, notes shorter and weaker at both ends of series (so that only longer notes in middle are easily countable); female song similar but shorter. Calls include short, upslurred "chirr", nasal "qwar", and a series of three notes with first two on same pitch.

**Habitat.** Understorey and mid-storey of lowland and montane evergreen forest, to 1250 m. Overlaps in many places with *D. mentalis*, but is seemingly more of a forest-edge bird, found frequently in roadside forest, older second-growth forest, and shaded light-gaps with dense thickets of bamboo (e.g. old landslide areas); replaced by that species in continuous primary forest. In some parts of range, replaced at higher elevations by *D. xanthopterus* (slight elevational overlap).

**Food and Feeding.** Little published. Feeds on insects, including adult and larval Lepidoptera, katydids (Tettigoniidae), mantids (Mantidae), stick-insects (Phasmatidae), true bugs (Hemiptera) and beetles (Coleoptera), also other arthropods. Observed also to feed on berries of mistletoe (*Rapanea*). Usually encountered as closely associated pair-members or as individuals, often associated with mixed-species flocks that include *D. mentalis* and *Drymophila* species. Moves constantly through vine tangles, bamboo thickets and crowns of understorey trees, 1-10 m above ground, often working vertically upwards on vines and stems; progresses by short, often wing-assisted hops, with pauses of up to several seconds to scan, mostly overhead. Twitches wings slightly but continuously while foraging. Very acrobatic, perch-gleaning prey from all surfaces but primarily undersurfaces of live foliage, and from stems, vines, thin branches and suspended dead leaves (particularly of bamboo), often stretching or hanging on leaves to reach substrates; nearly as frequently hover-gleans beneath overhanging vegetation, or makes short jumping sallies of several centimetres to pluck prey from undersides of leaves. Tendency to forage higher than *D. mentalis* where the two co-exist, although much overlap.

**Breeding.** Nest found in Brazil (Rio de Janeiro) in Dec, for which details previously unpublished: described as a small pendent cup or bag located c. 15 m off ground in fork of thin limb of tree over 25 m tall on steep slope in tall hilly forest.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Atlantic Forest Lowlands EBA. Fairly common throughout most of its range; viable populations exist in some protected reserves, notably in Brazil's Itatiaia and Tijuca National Parks, and in several other areas that are not formally protected. This species survives well in selectively logged forest. As a whole, however, the region which it inhabits has suffered severe habitat loss through urbanization, logging and agriculture, and this and other species that are confined to it require monitoring.

**Bibliography.** Aleixo (1999), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cory & Hellmayr (1924), Gonzaga *et al.* (1995), Isler, M.L. & Isler (2003a), Isler, M.L. *et al.* (1998), Isler, P.R. & Whitney (2002), Machado (1999), Parker (2003a), Parker & Goerck (1997), Pineschi (1990), Remsen & Parker (1984), Ridgely & Tudor (1994), Schönwetter & Meise (1967), Scott & Brooke (1985), Sick (1993, 1997), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Teixeira, Naeinovic & Marti (1993, 1994), Whitney (2003b), Zimmer (2003a).

## 51. Plain Antvireo

### *Dysithamnus mentalis*

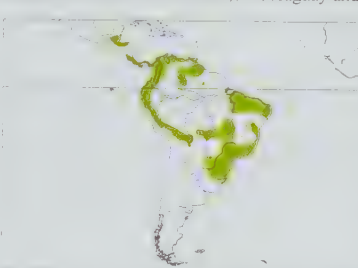
**French:** Batara gorgeret **German:** Olivgrauer Würgerling **Spanish:** Batarito Cabecigrís

**Taxonomy.** *Myothera mentalis* Temminck, 1823, Curitiba, Paraná, Brazil.

Relationships of genus not clearly established; preliminary molecular evidence suggests affiliation with *Thamnophilus*, and morphological characteristics have connected it with *Thamnomanes*. Present species and *D. stictothorax*, *D. striaticeps*, *D. puncticeps* and *D. xanthopterus* appear to form a monophyletic group to which other species placed in the genus are probably closely related. Racial divisions of present species somewhat tentative; some races may represent points on a cline of plumage variation, and in some areas (e.g. in Colombia and Peru) range delimitations therefore impossible to describe with certainty; molecular studies needed in order to establish relationships among populations. Eighteen subspecies recognized.

#### Subspecies and Distribution.

- D. m. septentrionalis* Ridgway, 1908 - Atlantic slope from SE Mexico (Campeche, Chiapas) E to Honduras, and both slopes in Costa Rica and W Panama (W of Canal).
- D. m. suffusus* Nelson, 1912 - both slopes in E Panama and extreme NW Colombia (N Chocó, N Antioquia).
- D. m. extremus* Todd, 1916 - W Colombia (W Andes and W slope of C range from S Antioquia, W Caldas and Risaralda S to Cauca).
- D. m. aequatorialis* Todd, 1916 - Pacific slope in W Ecuador and extreme NW Peru (Tumbes).
- D. m. viridis* Aveledo & Pons, 1952 - N Colombia (mountains from La Guajira S to N Santander) and W Venezuela (Sierra de Perijá and W portion of Andes in Zulia, Mérida and Táchira).
- D. m. cumbreanus* Hellmayr & Seilern, 1915 - N Venezuela (coastal mountains, Falcón and Lara E to N Sucre).
- D. m. oberi* Ridgway, 1908 - Tobago.
- D. m. andrei* Hellmayr, 1906 - NE Venezuela (S Sucre S to NE Bolívar) and Trinidad; presumably this race in W & S Guyana.
- D. m. ptaritepui* J. T. Zimmer & Phelps, Sr., 1946 - SE Venezuela (Ptari-tepuí and Sororopán-tepuí, in Bolívar).
- D. m. spodionotus* Salvin & Godman, 1883 - S Venezuela (S Bolívar, Amazonas) and extreme N Brazil (N Roraima).
- D. m. semicinereus* P. L. Slater, 1855 - WC Colombia from S Santander S to W Caquetá (E slope of C Andes, C & S portion of E range, and Macarena Mts).
- D. m. napensis* Chapman, 1925 - extreme S Colombia (E slope of Andes in Putumayo) S to extreme N Peru (N Amazonas).
- D. m. tambillanus* Taczanowski, 1884 - E slope in N & C Peru (E Piura, S Amazonas and SW Loreto S to Huánuco and W Ucayali).
- D. m. olivaceus* (Tschudi, 1844) - E slope in C Peru (Pasco S to Cuzco and W Madre de Dios).
- D. m. tavarae* J. T. Zimmer, 1932 - SE Madre de Dios S to C Bolivia (S La Paz, S Beni, Cochabamba, SW Santa Cruz).
- D. m. emiliae* Hellmayr, 1912 - NE Brazil (SE Pará E to Ceará and Paraíba, S to N Tocantins and Alagoas).
- D. m. affinis* Pelzel, 1868 - extreme NE Bolivia (NE Santa Cruz) and C Brazil (S Mato Grosso, N Mato Grosso do Sul, and S Tocantins S to S Goiás).
- D. m. mentalis* (Temminck, 1823) - EC & SE Brazil (E Bahia, S Minas Gerais and S Mato Grosso do Sul S to Rio Grande do Sul), E Paraguay and NE Argentina (Misiones).



**Descriptive notes.** 10-13 cm; 12.5-14.5 g (*septentrionalis*), 14-16 g (*extremus*, *tambillanus*), 13-15 g (*olivaceus*, *tavarae*), 12-14 g (*andrei*, *affinis*, *emiliae*), 11-13 g (*mentalis*). Male nominate race has forehead and crown dark grey, auriculars blackish; upperparts greyish-olive, concealed white interscapular patch; remiges, greater wing-coverts and tail dark greyish-olive, flight-feathers edged olive, greater coverts tipped white, tail narrowly tipped white; lesser and median coverts blackish, medians tipped white; throat and upper breast white, spotted light grey, sides olive-grey, centre of belly yellow, mixed with pale

grey on lower breast, flanks and crissum. Female differs from male in having crown cinnamon-tawny, upperparts and wings more olive (less grey), wing-covert tips and remex edgings olive-yellow, no white interscapular patch, yellow below more extensive. Races differ from nominate mainly in colour tones, most being greyer in male and browner in female: *viridis*, *cumbreanus* and *emiliae* resemble nominate; *septentrionalis* male is greyer with belly yellowish, female browner throughout; *suffusus* resembles previous but slightly paler; *affinis* is somewhat paler than last with belly centre white, female warm brown above; *andrei* is slightly darker grey and female duller brown than previous; *oberi* resembles last, female yellower below; *extremus* male has blackish crown; *semicinereus* has almost pure grey upperparts barely tinged olive, tail greyer, auriculars hardly darker than crown, throat and underparts grey, breast darker, belly centre white, lower belly and flanks light grey with faint yellow tinge, female crown more tawny, less grey above, wings and tail edged clay colour, throat tinged light olive-brown, breastband light olive-brown, contrasting white belly becoming pale yellowish-olive posteriorly, sides and flanks olive; *spodionotus* is darker than last, female warm ochraceous with white throat and belly; *ptaritepui* and *tavarae* are rather similar to last but less dark; *olivaceus* resembles previous but slightly more olive; *napensis* is paler than previous, has grey breastband; *tambillanus* is very like last; *aequatorialis* is much paler below than previous, belly pale yellow, flanks tinged grey, dark auriculars more contrasting. **VOICE.** A short (e.g. 2 seconds) series starting with a few (e.g. 4) evenly paced, countable notes at same pitch, notes then gradually becoming more abrupt and dropping in pitch, ending in accelerating roll. Calls include nasal, musical note, and distinctive short (e.g. 6 notes), rapid series of gradually rising notes. Vocal differences among races remain to be studied.

**Habitat.** In N of range and in Andes occupies understorey and mid-storey of humid, foothill and lower montane evergreen forest and nearby tall second growth, in some regions (e.g. W Ecuador, C Bolivia) extending to deciduous and semi-deciduous forest; generally at 600-2500 m, but to sea-level in some regions. In E & S found from sea-level to 1200 m: in moist *terra firme* and *várzea* forest and dry savanna forest in NE Brazil (*emiliae*), elsewhere in dry savanna forest, older second growth, semi-deciduous and viny forest, and gallery forest; also humid Atlantic forest (*mentalis*). Found at both forest edge and in interior. Replaces *D. puncticeps* at higher elevations in NW (Costa Rica S to W Ecuador).

**Food and Feeding.** Feeds on variety of insects, including adult and larval lepidopterans and beetles (Coleoptera), katydids (Tettigoniidae), true bugs (Hemiptera) and ants (Formicidae); also other arthropods, such as spiders. Observed also to feed on berries of mistletoe (*Rapanea*). Typically encountered as closely associated pair-members or as individuals, often with mixed-species flocks of woodcreepers (Dendrocolaptidae), foliage-gleaners (Furnariidae), antwrens, and greenlets (*Hylophilus*), but frequently independent of flocks. Forages from near ground to 4-5 m up, occasionally higher, rarely to lower canopy; constantly flicks both wings slightly as it forages. Moves are separated by long pauses to scan nearby surfaces; then jumps or sallies out in explosive flits to attack prey or to move to a new perch. Primarily a generalized perch-gleaner, taking prey directly from both surfaces of live leaves (mostly), vines (often) and thin branches, occasionally from dead leaves; less frequently, but regularly, makes short sallies to glean items from substrates, or hover-



gleans from undersides of leaves. Often forages by hopping upwards through vines where these present, and sometimes visits the ground to feed among roots and piles of branches. Occasionally follows swarms of army ants (both *Eciton burckellii* and *Labidus praedator*) for brief periods.

**Breeding.** Feb-Jul in Costa Rica, Apr-Jul in Trinidad, Nov in SE Brazil and Nov in N Argentina. Additional nest and egg descriptions from Colombia, Tobago and Paraguay. Nest a deep, thin-walled cup of dark fibrous roots, fungal filaments and/or herbaceous materials, exterior almost always at least partially covered with green moss, strands of which often extend as a sort of hanging "tail", and suspended by rim typically from horizontal fork of shrub or small tree 0.6-2.5 m above ground. Normal clutch 2 eggs, dull white (or pale cinnamon in SE Brazil), with purple or purplish-brown (brown in Tobago) spots and lines, usually heaviest at larger end; up to three replacement nests recorded, ringed female in Trinidad incubating on second nest only 12-15 days after clutch disappeared from first, and laid in third nest 26-28 days after loss of eggs in second; incubation 15 days, by both sexes during day; chick hatches naked, nestling period 9-10 days in Costa Rica; both sexes, when flushed from nest, drop straight to ground and engage in fluttering distraction displays, wings spread to reveal contrasting marginal coverts and outer webs of outer scapulars. A female in Trinidad documented as nesting 8 years after having been ringed as an adult.

**Movements.** None recorded; presumed resident throughout its range.

**Status and Conservation.** Not globally threatened. Generally fairly common throughout its extensive range. Occurs in several protected areas. In some areas, continuing deforestation could ultimately threaten some races. Survival rate in small remnant forest patches in SE Brazil has been found to be uneven, and appears to be adversely affected by selective logging.

**Bibliography.** Aleixo (1999), dos Anjos (2001a), dos Anjos & Boçon (1999), Bencke & Kindel (1999), Bosso *et al.* (1988), Cândido (2000), Christiansen & Pitter (1989), Cintra & Yamashita (1990), Cody (2000), Cory & Hellmayr (1924), Davis (1993), Euler (1900), French (1991), Flores *et al.* (2001), Fraga & Narosky (1985), Gochfeld & Tudor (1978), Hackett & Rosenberg (1990), Hellmayr (1920), Hilty (2003a), Hilty & Brown (1986), Howell & Webb (1995a), Isler, M.L. & Isler (2003a), Isler, M.L. *et al.* (1998), Isler, P.R. & Whitney (2002), Kreuger (1968), Krügel & dos Anjos (2000), Lill & French (1970), Maldonado-Coelho & Marini (2000), Marini, Motta-Júnior *et al.* (1997), Meyer de Schauensee & Phelps (1978), Miller (1963), Monroe (1968), Motta-Júnior (1990), do Nascimento *et al.* (2000), Novas (1970), Oates & Reid (1903), Orians & Paulson (1969), Parker (2003a), Pineschi (1990), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgely (1991), Schubart *et al.* (1965), Schulenberg (1983, 2003), Sick (1955, 1993, 1997), da Silva & Oniki (1988), Skutch (1969c), Slud (1964), Stiles & Skutch (1989), Stotz *et al.* (1996), Todd (1916), Valley (2001), Wetmore (1972), Whitney (1992a), Willis (1979b, 1984e), Zimmer, J.J. (1932e), Zimmer, K.J. (2003a).

## 52. Streak-crowned Antvireo

### *Dysithamnus striaticeps*

French: Batará strié

German: Streifenkopfwürgerling

Spanish: Batarito Estriado

**Taxonomy.** *Dysithamnus striaticeps* Lawrence, 1865, Angostura, Costa Rica.

Relationships of genus not clearly established; preliminary molecular evidence suggests affiliation with *Thamnomphila*, and morphological characteristics have connected it with *Thamnomanes*. Present species and *D. stictothorax*, *D. mentalis*, *D. puncticeps* and *D. xanthopterus* appear to form a monophyletic group to which other species placed in the genus are probably closely related. Monotypic.

**Distribution.** Atlantic slope in extreme SE Honduras (S El Paraíso), Nicaragua (R San Juan) and Costa Rica (also barely spilling over to Pacific slope in Guanacaste).

**Descriptive notes.** 10-11 cm; 15-17 g. Male has forehead and crown dark grey, heavily streaked greyish-white, auriculars blackish; upperparts greyish-olive, with concealed white interscapular patch; remiges dark greyish-olive, broadly edged with buffy greyish, wing-coverts blackish, tipped white, tail dark greyish-olive, tipped white; throat and breast white with bold dark streaks, sides olive-grey, belly whitish, lower underparts tinged yellowish. Distinguished from *D. mentalis* by bold streaks on crown and underparts. Female differs from male in dark-spotted rufous crown, less black on wing-coverts, ochraceous breast

and flanks. Subadult male is like female, but upperparts greyer, underparts whiter. VOICE. Loudsong a long (e.g. 21 notes, 4-1 seconds) series in which notes initially rise in pitch and intensity, remain constant, then gradually shorten, weaken and descend in pitch, notes countable before coalescing into a roll. Calls include soft single or double whistles and short "chirr".

**Habitat.** Understorey and mid-storey of lowland and foothill evergreen forest, to 900 m; more common in foothills than in lowlands. Sometimes ventures into adjacent older second-growth forest.

**Food and Feeding.** Little published. Feeds on insects, including orthopterans, true bugs (Hemiptera), adult and larval lepidopterans; also other arthropods, such as spiders. Usually encountered as closely associated pair-members or as individuals, most frequently associated with mixed-species flocks of woodcreepers (Dendrocolaptidae), foliage-gleaners (Furnariidae), antwrens, and greenlets (*Hylophilus*), usually 1.5-8 m above ground. Works deliberately through foliage, progressing by short hops, with brief intervening pauses to scan; most often in crowns of understorey saplings. Generalized gleaner of mostly live foliage (some dead leaves inspected), perch-gleaning prey from both surfaces of live leaves and from vines, stems and branches; frequently hover-gleans or makes short sallies to undersides of overhanging leaves.

**Breeding.** Mar-Jun in Costa Rica. Nest a thin cup of mostly dark horsehair-like fibres from stem of a woodland fern, often decorated on outside with green moss, which may trail down several centimetres from bulk of nest, attached by rim in slender horizontal fork usually 1.5-4 m above ground. Normal clutch 2 eggs, whitish, blotched and flecked with chocolate-brown or purplish-brown, heavily on larger end; incubation by both sexes, period at least 14 days; both sexes also brood and feed nestlings.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Central American Caribbean Slope EBA. Fairly common to uncommon throughout its relatively small range. Although ongoing clearing of forest for agriculture is of concern throughout the region, this species has viable populations in a number of protected parks and reserves in Costa Rica, key areas including La Selva Biological Reserve and, particularly, Braulio Carrillo National Park.

**Bibliography.** Anon. (1998a), Blake & Loiselle (2001), Carriger (1910), Cody (2000), Cory & Hellmayr (1924), Isler & Whitney (2002), Monroe (1968), Ridgely & Gwynne (1989), Ridgely (1991), Schönwetter & Meise (1967), Schulenberg (1983), Skutch (1972), Slud (1964), Stattersfield *et al.* (1998), Stiles & Skutch (1989), Stotz *et al.* (1996), Zimmer (2003a).

## 53. Spot-crowned Antvireo

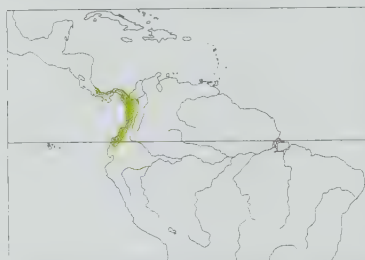
### *Dysithamnus puncticeps*

French: Batará ponctué German: Tüpfelscheitelwürgerling Spanish: Batarito Coronipunteado

**Taxonomy.** *Dysithamnus puncticeps* Salvin, 1866, Calovévora, Veraguas, Panama.

Relationships of genus not clearly established; preliminary molecular evidence suggests affiliation with *Thamnomphila*, and morphological characteristics have connected it with *Thamnomanes*. Present species and *D. stictothorax*, *D. mentalis*, *D. striaticeps* and *D. xanthopterus* appear to form a monophyletic group to which other species placed in the genus are probably closely related. Birds from S Panama and W Colombia described as race *intensus* and others from SW Colombia and W Ecuador as *flemmingi* on basis of darkness of plumage, but apparently intergrade broadly with each other and with other populations; racial subdivision considered unwarranted. Monotypic.

**Distribution.** SE Costa Rica (Limón), Panama (Caribbean slope, also Pacific slope in extreme E Panamá and Darién), W Colombia (Pacific slope, and lower Cauca Valley in Antioquia) and NW Ecuador (S to Los Rios and Manabí).



**Descriptive notes.** 11-12 cm; 15-17 g. Male has forehead to nape dark grey, heavily dotted white; upperparts greyish-olive, concealed white interscapular patch; remiges dark greyish-olive, broadly edged buffy greyish, wing-coverts blackish, tipped white, tail dark greyish-olive, tipped white; throat to upper belly white with dark streaks, sides olive-grey, lower underparts tinged ochraceous. Differs from *D. striaticeps* in having crown and nape dotted whitish rather than streaked, also streaks below paler, less distinct. Female differs from male in dark-spotted rufous crown to nape, pale buff head side, throat and central belly,

ochraceous rest of underparts, thinner streaks below, less black on wing-coverts. VOICE. Loudsong a rapid (e.g. 28 notes, 2-7 seconds) trill, notes not countable, pitch first rising slightly, falling slightly terminally, pace constant initially, then accelerating slightly towards end. Calls include short descending "chirr".

**Habitat.** Understorey and mid-storey of lowland and foothill evergreen forest, to 1000 m. Replaced at higher elevations by *D. mentalis* throughout much of range.

**Food and Feeding.** Little published. Feeds on various insects, including small grasshoppers and relatives (Orthoptera), and other arthropods, including spiders. Usually in pairs or family groups, with individuals associating closely, frequently with mixed-species flocks of other insectivores, but perhaps a less faithful flock-follower than *D. striaticeps*. Forages mostly in crowns and upper strata of understorey trees, 3-8 m above ground, moving deliberately through branches by short hops, with pauses to scan; appears to have preference for somewhat open foliage where it can visually examine the surroundings. Frequently hover-gleans prey from undersides of overhanging leaves; also perch-gleans from mostly live foliage, or makes short upward-directed sallies to vegetation. Occasionally noted as following army ants (*Eciton burckellii*) for brief periods, typically only when mixed-species flock intercepts a swarm; then usually sticks to periphery of swarm in more open understorey, 1-6 m above ground (rarely descending to 0.5 m), and sallies to glean flushed arthropods from foliage, stems and branches.

**Breeding.** Apr-Jul in Panama; nest-building noted in late Aug in Colombia (upper Anchicayá Valley). A nest in Panama was a cup suspended by rim in horizontal fork 2 m above ground; 2 eggs; both sexes incubated during day. In another Panamanian study (Canal Zone), three monitored nests were all lost to predation.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Not well known; considered fairly common to uncommon throughout most of its range. Range encompasses some large protected areas, examples of which are Soberanía, Darién and Chagres National Parks and Comarca Kuna Yala Indigenous Reserve, in Panama, Ensenada de Utría and Los Katíos National Parks, in Colombia, and Bilsa Biological Station, in Ecuador. No immediate threats.

**Bibliography.** Anon. (1998a), Cory & Hellmayr (1924), Eisenmann (1952), Greenberg & Gradwohl (1980, 1985), Griscom (1927b), Gross (1927), Hilty (1997), Hilty & Brown (1986), Isler & Whitney (2002), Parker & Carr (1992), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgely (1991), Robinson *et al.* (2000), Schemske & Brokaw (1981), Schulenberg (1983), Slud (1964), Stiles & Skutch (1989), Stotz *et al.* (1996), Sturgis (1928), Wetmore (1972), Willis (1972b, 1980, 1984e), Willis & Eisenmann (1979), Zimmer (2003a).

## 54. Rufous-backed Antvireo

### *Dysithamnus xanthopterus*

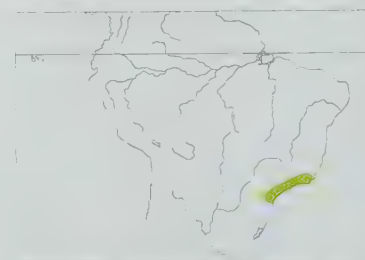
French: Batará à dos rous

German: Rostrückenwürgerling

Spanish: Batarito Dorsirrufo

**Taxonomy.** *Dasythamnus xanthopterus* Burmeister, 1856, Nova Friburgo, Rio de Janeiro, Brazil. Relationships of genus not clearly established; preliminary molecular evidence suggests affiliation with *Thamnomphila*, and morphological characteristics have connected it with *Thamnomanes*. Present species and *D. stictothorax*, *D. mentalis*, *D. striaticeps* and *D. puncticeps* appear to form a monophyletic group to which other species in the genus are probably closely related. Monotypic.

**Distribution.** Coastal mountains of SE Brazil from Rio de Janeiro S to Paraná.



**Descriptive notes.** 12 cm. Male has head and upper back grey, with forehead, side of head to above eye and lores spotted white; remaining upperparts rufous; centre of throat white; underparts pale grey, whitest on belly, with flanks ochraceous. Female is similar to male, but crown rufous, facial spotting and underparts pale buff, with sides and flanks pale olivaceous. VOICE. Loudsong is a rapid (e.g. 20 notes, 2 seconds), slightly accelerating trill, loudest initially (except for the first note), then gradually falling in intensity and pitch. Calls include a short, low-pitched muffled note slightly up and down in pitch, sounding

like "quock"; also a short, harsh bark.



**Habitat.** Mid-storey and subcanopy of montane evergreen forest and old second growth, at 750-1700 m.

**Food and Feeding.** Little published. Feeds on insects and other arthropods, including flies (Diptera), butterfly and moth larvae (Lepidoptera) and beetles (Coleoptera); observed also to feed on berries of mistletoe (*Rapanea*). Forages in pairs or individually, mostly 3-12 m above ground, particularly in extremities of mid-storey canopy-tree branches, crowns of bamboo, and woody vine tangles; progresses by short, often wing-assisted hops, separated by pauses of 1-3 seconds to scan for prey. Makes short (to 50 cm), jumping, upward-directed sallies to glean prey from undersides of overhanging vegetation, striking quickly, with little pause or fluttering before dropping back to lower perch; performs such manoeuvres more frequently than do congeners. Also perch-gleans, by reaching or lunging, from all leaf, stem, vine and branch surfaces, with quick bill-stabbing motions. Frequently follows mixed understorey flocks of furnariids and other thamnophilids; not observed at ant swarms.

**Breeding.** Little known. Season judged to be Sept-Feb. Single described nest: an open cup of thin plant fibres, surrounded by thick layer of hanging moss (apparently for camouflage), suspended by rim from horizontal fork 1.8 m above ground; contained 2 eggs, white, striped and spotted violaceous and brown, markings concentrated at larger end.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Atlantic Forest Mountains EBA. Uncommon and locally distributed over a small area; as such, the species warrants continued monitoring. Viable populations exist in a few protected parks and reserves, among them Itatiaia National Park and Serra dos Órgãos National Park; also present in Serra do Mar State Park.

**Bibliography.** Cory & Hellmayr (1924), Isler & Whitney (2002), Luigi, Raposo & Schloemp (1996), Luigi, Schloemp & Raposo (1991), Parker (2003a), Pineschi (1990), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993, 1997), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Whitney (2003a), Zimmer (2003a).





*ssp leucostictus*

55

*ssp tucuyensis*

♂  
56  
♀

57  
♂  
♀

♂  
58  
*ssp obidensis*

♀  
*ssp ardesiacus*

59  
♀

♂  
♀  
*ssp caesioides*

60

♂  
♀  
*ssp glaucus*

61  
♀

PLATE 49

inches 3  
cm 8



## 55. White-streaked Antvireo

### *Dysithamnus leucostictus*

**French:** Batará à points blancs

**Spanish:** Batarito Albilistado

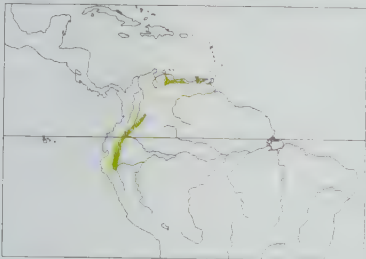
**German:** Nördlicher Schwarzbrustwürgerling

**Other common names:** White-spotted Antvireo/Antshrike; Venezuelan Antvireo (*tucuyensis*)

**Taxonomy.** *Dysithamnus leucostictus* P. L. Slater, 1858, Rio Napo, Ecuador. Relationships of genus not clearly established; preliminary molecular evidence suggests affiliation with *Thamnomphylus*, and morphological characteristics have connected it with *Thamnomanes*. Species was formerly treated as conspecific with geographically remote *D. plumbeus*, and incorrectly transferred to *Thamnomanes*. Race *tucuyensis* distinctive, and widely separated geographically from nominate; vocal and molecular studies may indicate it is a separate species. Two subspecies recognized.

#### **Subspecies and Distribution.**

*D. l. tucuyensis* Hartert, 1894 - N Venezuela (coastal mountains from Falcón and Lara to Monagas).  
*D. l. leucostictus* P. L. Slater, 1858 - E slope of Andes from C Colombia (S from Meta) S to extreme N Peru (N Amazonas, Cajamarca).



**Descriptive notes.** 12-13 cm; 20 g (*leucostictus*). Male is dark grey, blackest on breast, wing-coverts with white tips and narrow white edges; concealed white interscapular patch. Female is reddish-brown above; side of head, throat and underparts grey, spotted and streaked white, flanks and crissum tinged brown and unstreaked. Subadult male is rufous-tinged grey, wings rufous-brown, tail dark brown, throat spotted pale grey, underparts with thin white shaft streaks. Race *tucuyensis* male differs in having wing-covert edgings broader, bend of wing and outermost primary edged white, underparts paler, female is paler throughout, yellower above, spots below much larger, flanks and crissum olive. Voice. Loudsong nominate race a short (e.g. 6 notes, 1-8 seconds), easily countable series of strong whistles, pitch falling (except sometimes for initial note), first and last notes less intense; *tucuyensis* a moderately long (e.g. 13 notes, 2-7 seconds), barely countable series of strong whistles, pitch and intensity gradually rising to middle notes, then gradually declining.

**Habitat.** Understorey of montane evergreen forest; at 900-2000 m in Colombia to Peru, 500-1900 m in Venezuela.

**Food and Feeding.** Little published. Feeds on variety of insects and other arthropods. In Venezuela, typically encountered in pairs, either alone or, more frequently, associated with mixed-species understorey flocks; rarely found away from mixed-species flocks in W range (nominate). Typical flock associates include *D. mentalis*, *Myrmotherula schisticolor*, Olivaceous Woodcreeper (*Sittasomus griseicapillus*), Three-striped Warbler (*Basileuterus tristriatus*) and Slate-throated Redstart (*Myioborus miniatus*). In Venezuela, usually forages 1.5-4 m above ground, concentrating on leafier and more viny layers of understorey. Typical foraging pace more rapid than that of sympatric *D. mentalis*. Changes perches frequently, and often suddenly; a common manoeuvre is to fly from one tree to another and immediately flutter down a metre or more to a lower perch (making it harder to observe than many congeners). Otherwise, a generalized foliage-gleaner, taking prey by perch-gleans and in jumping upward-directed sallies to undersides of overhanging leaves, vines or branches. Frequently drops to the ground to pursue flushed prey, or to pounce on prey in leaf litter, sometimes spending several seconds before moving back to an above-ground perch.

**Breeding.** Nothing recorded.

**Movements.** None recorded; presumed resident in both parts of range.

**Status and Conservation.** Not globally threatened. Uncommon throughout much of its range. No immediate threats. In W, Andean foothill forests in general are being cleared for agriculture and human settlement at an alarming rate, and the status of taxa with restricted ranges could change rapidly; large protected areas that could serve as population reservoirs of nominate race include Podocarpus, Sumaco-Galeras and Sangay National Parks, in Ecuador. Henri Pittier National Park, in Venezuela, protects a sizeable population of *tucuyensis*.

**Bibliography.** Cory & Hellmayr (1924), Hellmayr & Seilern (1912), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schäfer & Phelps (1954), Schulenberg (1983), Schulenberg & Awbrey (1997a), Stotz *et al.* (1996), Whitney (1992a), Zimmer, J.T. (1933a), Zimmer, K.J. (2003a).

## 56. Plumbeous Antvireo

### *Dysithamnus plumbeus*

**French:** Batará plombé

**Spanish:** Batarito Plomizo

**German:** Südlicher Schwarzbrustwürgerling

**Other common names:** Plumbeous Antshrike

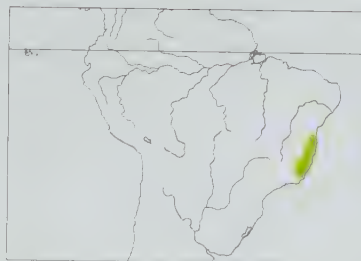
**Taxonomy.** *Myiothera plumbea* Wied, 1831, south-eastern Brazil.

Relationships of genus not clearly established; preliminary molecular evidence suggests affiliation with *Thamnomphylus*, and morphological characteristics have connected it with *Thamnomanes*. Species was formerly treated as conspecific with geographically remote *D. leucostictus*, and incorrectly transferred to *Thamnomanes*. Monotypic.

**Distribution.** SE Brazil from S Bahia S to E Minas Gerais and extreme N Rio de Janeiro.

**Descriptive notes.** 12-13 cm. Male is dark grey, blackest on breast, wing-coverts with white tips and narrow white edges; concealed white interscapular patch. Female is mostly olive-brown, two buff-white wingbars, throat very pale grey, lower underparts ochraceous. Voice. Loudsong a short (e.g. 4 notes, 1-3 seconds) series of moderately long whistles (notes longer than spaces between them), second note at higher pitch than first, the third and fourth notes declining in pitch, first and last notes less intense.

**Habitat.** Understorey of lowland evergreen forest, to 900 m, mostly below 600 m. Seemingly requires primary or little-disturbed forest, where it inhabits shaded old treefalls overgrown with vines and small trees.



**Food and Feeding.** Little published. Feeds mainly on insects and other arthropods, up to 10 cm in length, including katydids (Tettigoniidae) and stick-insects (Phasmatidae); stomach contents reported as insects, insect eggs, and a chrysalis. Encountered as pairs or individuals, which forage in dense tangles from ground level up to 4 m above ground, mostly below 2 m. Progresses deliberately by short hops, with pauses to scan. Perch-gleans arthropods from all surfaces of live leaves, vines and branches, and occasionally probes in hanging clusters of dead leaves. Regularly hops on the ground or, especially, along fallen branches near ground;

also perches on small saplings close to ground. Occasionally perches quietly, sitting rather upright and peering around slowly. Sometimes associates with mixed-species flocks passing through its territory, members of which include Lesser Woodcreeper (*Lepidocolaptes fuscus*), White-eyed Foliage-gleaner (*Automolus leucophthalmus*), Black-capped Foliage-gleaner (*Phylidior atricapillus*), *Myrmotherula urosticta* and *M. axillaris*, and Red-crowned Ant-tanager (*Habia rubica*).

**Breeding.** Little known. Season probably Aug-Dec; four specimens with slightly enlarged gonads in Aug, Dec and Jan, one with half-enlarged gonads in Nov, and four with gonads dormant in Jun, Jul and Dec; adult male accompanied by two juvenile males in mid-Oct. One published nest record. 23rd Aug: nest 0.3 m above ground in a shrub 1 m tall in closed forest understorey; 2 eggs, being incubated by female.

**Movements.** Presumed resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Atlantic Forest Lowlands EBA. Historically never common, and its numbers have declined considerably in the past few decades, mainly as a result of loss of primary Atlantic Forest on which it depends. Only a single record from Bahia, in 1928, and the species' presence in the state of Rio de Janeiro has been confirmed at only one locality. Thus, the known range is in essence restricted to Espírito Santo and Minas Gerais, where it occurs at several small reserves: Rio Doce State Park and Fazenda Montes Claros, in Minas Gerais, and Sooretama and Augusto Ruschi Biological Reserve and Linhares Natural Reserve, in Espírito Santo. Main stronghold seems to be Sooretama, where the species was considered fairly common in 1980-1981, and where at least six pairs held territories along 2 km of one forest trail through the 1980s; more recent anecdotal information suggests that it has declined further in the past decade; three territories were located along c. 1.5 km of forest trail in Sooretama in Oct 2000. The species appeared to be less common in nearby Linhares, where surveys of 8-10 km of forest trails detected only two territories. Systematic surveys are needed in order to identify any additional areas not currently protected where the species may exist, and to ascertain current population levels. Additionally, more information is needed on the species' natural history and habitat requirements, which could shed light on its decline and influence possible plans for management. Continued protection of the above-mentioned reserves is critical.

**Bibliography.** Bernardes *et al.* (1990), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Naumburg (1939), Parker (2003a), Ridgely & Tudor (1994), Schulenberg (1983), Scott & Brooke (1985), Sick (1993, 1997), Sick & Teixeira (1979), Sneath (1927), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Tobias *et al.* (1993), Wege & Long (1995), Willis (1984c, 1992b), Zimmer (2003a).

## 57. Bicoloured Antvireo

### *Dysithamnus occidentalis*

**French:** Batará occidental

**German:** Schiefergrauer Würgerling

**Spanish:** Batarito Bicolor

**Other common names:** Western Antvireo/Antshrike, Chapman's Antvireo/Antshrike

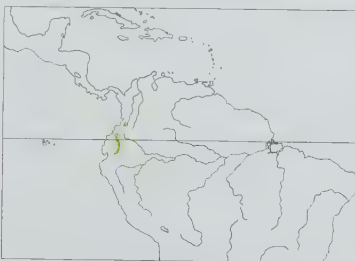
**Taxonomy.** *Thamnomphylus aethiops occidentalis* Chapman, 1923, Cocal, 4000 ft [c. 1200 m], Cauca, Colombia.

Relationships of genus not clearly established; preliminary molecular evidence suggests affiliation with *Thamnomphylus*, and morphological characteristics have connected it with *Thamnomanes*. Present species has been variously allocated to both of those genera, but bulk of vocal, morphological and ecological evidence supports its inclusion in current genus. Racial identity of birds on Pacific slope in N Ecuador uncertain; tentatively placed in nominate, but possibly belong to race *punctitectus*. Two subspecies recognized.

#### **Subspecies and Distribution.**

*D. o. occidentalis* (Chapman, 1923) - Pacific Andean slope of S Colombia (Valle, Cauca) and extreme N Ecuador (Carchi).

*D. o. punctitectus* Chapman, 1924 - E Andean slope in Ecuador (Napo, Morona-Santiago).



**Descriptive notes.** 13.5 cm. Male is blackish-grey, paler below; interscapular patch white, greater and median wing-coverts black, dotted white, lesser coverts (exposed only in display) mostly white. Female has upperparts extensively chestnut, wing-coverts spotted buffy white, anterior underparts dark grey with fine white shaft streaks, belly and crissum olive-brown. Subadult male (first basic plumage?) male resembles female, but with larger white wing-covert spots and underpart streaks; an apparent second-year male resembled adult male, but posterior upperparts and underparts brownish and fine white shaft streaks on throat

and breast. Race *punctitectus* is paler (both sexes), with lesser wing-coverts completely white. Voice. Loudsong uncertain, may consist of one of the following calls. Calls include a brief series of notes (usually 3, sometimes 2 or 4) falling in pitch and intensity, repeated at rate of 1 per minute (but variable); short (e.g. 0.25 seconds), variable, downslurred whistle; and a short (less than 1 second) rising series of 3 abrupt notes followed by longer note.

**Habitat.** Understorey of montane evergreen forest; found at 900-2200 m in Colombia and 1500-2200 m in Ecuador. On Mt Sumaco (Napo, Ecuador), race *punctitectus* was found at 1675-1750 m



in primary subtropical forest, but only in natural clearings (treefalls, landslides, light-gaps) where amount of sunlight penetrating the mature forest canopy was greater than average, creating locally dense understorey 2–10 m tall, dominated by woody plants and herbaceous growth with trunks and stems less than 2 cm in diameter at base; forest floor was covered with patchy growth of ferns, small herbaceous plants, and bamboo (in some areas), over thick layer of leaf litter. In Colombia, nominate race was found at Tambito Nature Reserve (Cauca) in a primary-forest treefall clearing, a steep-sloped dense mature secondary palm forest, and ridgetop habitat between 1620 m and 2180 m.

**Food and Feeding.** Little known. Feeds on insects and other arthropods; identified prey items included small caterpillars and a small adult moth (Lepidoptera), a katydid (Tettigoniidae) or mantid (Mantidae) c. 2 cm in length, and a whitish cricket (Gryllidae) c. 4 cm long. In Ecuador, encountered singly or in pairs; birds observed in Jan on Mt Sumaco were not associated with mixed-species flocks. Moved from perch to perch through understorey, stopping to scan for prey for up to 15 seconds (usually less) between movements, while constantly flicking wings and, often, tail. Arthropod prey were perch-gleaned from leaves and twigs, always within 2 m of ground (usually within 1 m); occasionally dropped to ground and flipped fallen leaves to expose prey. Sally-gleaning also commonly employed, usually involving lateral or upward-directed sallies of less than 2 m. Only one instance of dead-leaf searching reported.

**Breeding.** Very little known. One published record of a nest in Ecuador, with both adults attending single nestling, in Dec: an open cup of black fungal filaments and twigs, suspended by rim from fork between two slender green branches, and partly protected by overhanging green leaves.

**Movements.** Presumed resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Chocó EBA and Ecuador-Peru East Andes EBA. Both subspecies only recently rediscovered following decades without being recorded. Species is still known from only a few areas, one of which (the type locality for *punctitectus*) has suffered significant clearance for small-scale agriculture (primarily, planting of naranjilla). The recent Colombian record from headwaters of R Pance is from a site that appears to be just outside Farallones de Cali National Park, and it seems likely that this ornithologically underexplored park may contain a population of this species. Locality data from at least two of the Cauca specimens suggest that the sites may lie within current boundaries of Munchique National Park; this is adjacent to the 3000-ha Tambito Nature Reserve, where recent surveys found nominate race to be uncommon. In Ecuador, Volcán Sumaco is still largely pristine, with an intact forest corridor from lowlands to the highlands; large parts of this ecologically important area are protected, at least on paper, within the Sumaco-Galeras National Park. True conservation of this area would provide a significant reserve for *punctitectus* and many other threatened taxa. Recent range extensions in Ecuador, to Carchi and Morona-Santiago, offer hope that the species may be found in additional locations.

**Bibliography.** Bond & Meyer de Schauensee (1940), Chapman (1924), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Donegan & Dávalos (1999), Fuhrman (2001), Granizo (2002), Greeney (2002), Gyldestolpe (1941a), Hilty & Brown (1986), Isler & Whitney (2002), Krabbe & Palacio (1999), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schulenberg (1983), Stattersfield & Capper (2000), Stotz *et al.* (1996), Whitney (1992a), Zimmer (1933a).

## Genus *THAMNOMANES* Cabanis, 1847

### 58. Dusky-throated Antshrike

#### *Thamnomanes ardesiacus*

**French:** Batará ardoisé

**Spanish:** Batará Gorgioscuro

**German:** Nördlicher Schwarzkehlwürgerling

**Other common names:** Grey-throated Antshrike/Antvireo

**Taxonomy.** *Dysithamnus ardesiacus* P. L. Selater and Salvin, 1868, Rio Napo, Ecuador. Relationships to other genera unclear. Species currently placed in genus appear to be related on basis of morphology and behaviour, although their nest architecture is somewhat variable. Present species has sometimes been placed in genus *Dysithamnus*. Forms a superspecies with *T. saturninus* and has been treated as conspecific; taxonomic study of populations needed. Races appear to intergrade; specimens in N part of range of nominate approach *obidensis* in extent of black on male throat, and region in E Colombia that is said to separate races is poorly known ornithologically; further work required. Two subspecies recognized.

#### **Subspecies and Distribution.**

*T. a. ardesiacus* (P. L. Selater & Salvin, 1868) - SC & SE Colombia (near base of Andes S from Meta and C Caquetá, also extreme SE Amazonas) S to E Peru (except SE Loreto S of Amazon and E of R Ucayali), NE Bolivia (Pando, NW La Paz) and adjacent Brazil (SE Acre).

*T. a. obidensis* (Snethlage, 1914) - E & S Venezuela (Delta Amacuro, Bolívar, Amazonas), the Guianas, E Colombia (Guainía, E Vaupés) and N Amazonian Brazil (R Negro drainage to N Pará and Amapá).

**Descriptive notes.** 13–14 cm; 16–19 g. Male nominate race is darkish grey, paler on belly, small white interscapular patch (sometimes absent), tail slightly tipped white; often some black feathers on throat in N of range. Distinguished from *T. saturninus* by shorter bill (only slight overlap in measurements), lesser amounts of black on throat, white interscapular patch smaller or absent. Female is dark olive-brown above, wings and tail more rufous, throat buff-white, pale buffy ochraceous below. Subadult male initially resembles female but more cinnamon-brown, later like male except centre of throat feathers white, cinnamon-

brown feathers retained especially on wing-coverts and lower underparts; subadult female more oliveaceous than adult female, especially across breast. Race *obidensis* has shorter tail, male throat black, wings sometimes with some white. **VOICE.** Loudsong a moderately long series of notes (e.g. 12 notes, 3 seconds) that gradually become shorter, more intense, and rise in pitch before dropping into final raspy note (final note may be omitted, or may be repeated 2–3 times). Calls include short (e.g. 0.5–1 second) “chirr”, downslurred raspy note, and more abrupt, clearer note.

**Habitat.** Understorey of lowland evergreen forest, to 1050 m. Primarily in *terra firme* forest; less common in seasonally flooded forest.

**Food and Feeding.** Feeds mostly on various insects, also other arthropods. In study of stomach contents of nine specimens from S Peru, four-fifths of all insect remains were either katydids (Tettigoniidae), other orthopterans and cockroaches (Blattidae), or beetles (Coleoptera); remainder included true bugs (Hemiptera), wasps (Hymenoptera), adult and larval lepidopterans, also other arthropods (e.g. spiders); a small unidentifiable lizard found in one stomach. Forages in pairs, individually, or in family groups, 0–10 m above ground, mostly 0–4 m, perching somewhat upright on horizontal fronds of small understorey palms and on branches of slender saplings, where pauses for 2–30 seconds while turning the head slowly as it scans for prey; perches less upright than, and seldom pauses as long as, *T. caesi* and *T. schistogynus*. Sallies diagonally or vertically to take prey primarily from underside of foliage (less frequently from tops of leaves, stems, the air, tree trunks, or ground) up to 2.5 m away, typically continuing flight on to another perch following capture; sometimes perch-gleans prey from nearby substrates, including dead leaves. Usually closely associated with mixed-species understorey flocks, particularly those with *T. caesi* or *T. schistogynus*, foliage-gleaners (of genus *Automolus*), *Myrmotherula longipennis* and other antwrens (*M. gutturalis*, *M. leucophthalma*, *M. haematotota* or *M. fieldsaai*, the exact one depending on geographical location), Tawny-crowned Greenlet (*Hylophilus ochraceiceps*) and Red-crowned Ant-tanager (*Habia rubica*); in many areas seems to show particular preference for following *M. longipennis*, often perching within 2–3 m of latter and following it each time it moves to another tree. Regularly (but not habitually) attends army ants (*Eciton burchei*), leaving mixed-species flocks to follow swarm for up to 2–3 hours; usually stays in open understorey, avoiding dense ground cover used by obligate ant-followers; also seen foraging over smaller, unidentified ants; observed with woodcreepers (Dendrocolaptidae) sallying after winged ants fleeing from nests as army ants approached.

**Breeding.** Nests and/or young in Jun–Oct in French Guiana; fledgling in Oct in Brazil (Manaus). In French Guiana, cup-nest of fungal (*Marasmius*) filaments, the exterior garnished with dried leaves with disarrayed appearance (simulating pile of leaves caught in branches), 1–6 m up in fork of horizontal branch of small tree in undergrowth on a hill, another nest 1–9 m off ground; 2 eggs, pinkish-white with large violaceous patches, incubation period 11–12 days. Seven nests in Peru described as like that of a vireo (*Vireo*), often festooned with leaves, 0.5–2 m up in fork of sapling.

**Movements.** None recorded; presumed resident throughout its range.

**Status and Conservation.** Not globally threatened. Considered fairly common throughout its large range. Range includes numerous parks and reserves: examples are Canaima, Duida and Yacapana National Parks, in Venezuela, Brownsberg Nature Park and Raleigh Falls-Voltzberg National Park, in Surinam, Jaú, Pico da Neblina and Monte Roraima National Parks, in Brazil, Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, and Madidi National Park, in Bolivia. These protect vast areas of suitable habitat. In Venezuelan study, this species survived selective logging in a forest, but population density was reduced, substantially so after some types of logging.

**Bibliography.** Álvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Dick *et al.* (1984), Foster *et al.* (1994), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Mason (1996), Meyer de Schauensee & Phelps (1978), Munn (1984, 1985), Munn & Terborgh (1979), Novaes (1980), O’Neill (1974), Oniki & Willis (1972, 1982), Parker (2003a), Parker & Bailey (1991), Parker & Remsen (1987), Pearson (1975c), Remsen (1986), Reynaud (1998), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rosenberg (2003), Schulenberg (1983), Servat (1996), Sick (1993), Snyder (1966), Stotz (1990b, 1993), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Terborgh & Weske (1969), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1988a, 1994), Tostain (2003), Tostain *et al.* (1992), Wiley (1980), Willis (1977, 1984e), Zimmer, J.T. (1932e), Zimmer, K.J. (2003a).

### 59. Saturnine Antshrike

#### *Thamnomanes saturninus*

**French:** Batará saturnin

**German:** Südlicher Schwarzkehlwürgerling

**Spanish:** Batará Saturnino

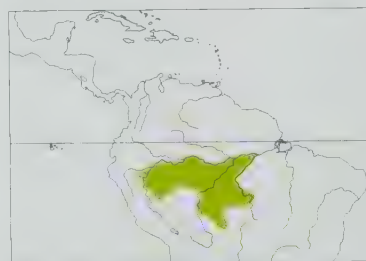
**Taxonomy.** *Thamnophilus saturninus* Pelzel, 1868, Borba, Rio Madeira, Brazil.

Relationships to other genera unclear. Species currently placed in genus appear to be related on basis of morphology and behaviour, although their nest architecture is somewhat variable. Present species has sometimes been placed in genus *Dysithamnus*. Forms a superspecies with *T. ardesiacus* and has been treated as conspecific; taxonomic study of populations needed. Extent of geographical ranges of races unclear; *huallagae* may not be distinguishable from nominate. Two subspecies recognized.

#### **Subspecies and Distribution.**

*T. s. huallagae* (Cory, 1916) - NE Peru S of R Amazon (along S bank of R Marañón to R Huallaga, and S to R Ucayali in S Loreto) and SW Amazonian Brazil (drainage of upper R Jurúá, S to W Acre).

*T. s. saturninus* (Pelzel, 1868) - SC Amazonian Brazil (from lower R Jurúá and upper R Purus E to S bank of R Tapajós and both banks of R Teles Pires) S to Rondônia, N Mato Grosso and extreme NE Bolivia (NE Santa Cruz).



**Descriptive notes.** 13.5–14.5 cm; 19–21 g. Male is darkish grey, with black throat and upper breast; white interscapular patch, white tips of wing-coverts, white edges at bend of wing, tail thinly tipped white, belly feathers spottily edged white (sometimes absent). Distinguished from *T. ardesiacus* by more extensive black throat, larger interscapular patch, longer bill (only slight overlap in measurements). Female is rufescent-tinged olive-brown above, wings and tail rufous, white throat contrasting with olive breast, deep tawny-buff below. Race *huallagae* has less black on throat, female differs from nominate in having throat feathers

spotted grey, breast darker. **VOICE.** Loudsong a moderately long series of notes, gradually becoming shorter and rising in pitch, before lower-pitched final rasping note. Calls include short “chirr”, downslurred rasp, and abrupt, clearer note. Vocalizations similar to those of *T. ardesiacus*; detailed analysis of possible differences currently unavailable.

**Habitat.** Understorey of lowland evergreen forest, mostly below 300 m; to 650 m in NE Bolivia. Primarily in *terra firme* forest; less common in seasonally flooded forest.

**Food and Feeding.** Feeds on variety of insects, including katydids (Tettigoniidae), mantids (Mantidae), adult and larval lepidopterans, true bugs (Hemiptera), and probably other arthropods. Forages in pairs, singly, or in family groups, mostly 1–4 m above ground, perching semi-upright on slender branches or horizontal fronds of small understorey palms, where it pauses for 2–30 seconds, actively scanning; perches more horizontally than *T. caesi* and *T. schistogynus*, and seldom pauses as long as those species. From perch, sallies diagonally and vertically to take prey from air or from foliage and stems (less frequently from trunks or ground) up to 2.5 m away, typically continuing on to an-



other perch following capture. Usually closely associated with mixed-species understorey flocks of other insectivores, particularly Elegant Woodcreeper (*Xiphorhynchus elegans*), *Myrmotherula longipennis*, *M. leucophthalma*, Tawny-crowned Greenlet (*Hylophilus ochraceiceps*) and Red-crowned Ant-tanager (*Habia rubica*); often in same flocks with *T. caesi*us, but generally forages lower than that species (some overlap). Sometimes follows raiding swarms of army ants (*Eciton burckhelli*).

**Breeding.** Nothing published. One report of female flushed from a nest in Aug in NE Peru; nest a small cup suspended from two horizontal limbs 3 m above ground in small sapling.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Fairly common throughout its range, much of which remains little developed and relatively inaccessible. Range includes some large protected areas, e.g. Tapajós and Pacaás Novos National Parks, in Brazil, and Noel Kempff Mercado National Park, in Bolivia. At one site, numbers were reduced substantially after selective logging.

**Bibliography.** Cory & Hellmayr (1924), Isler & Whitney (2002), Johns (1991), Killen & Schulenberg (1998), Oren & Parker (1997), Parker (2003a), Ridgely & Tudor (1994), Robbins (2003b), Schulenberg (1983), Sick (1993), Stotz (1990b), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Willis (1984c), Zimmer, J.T. (1932e), Zimmer, K.J. (2003a).

## 60. Cinereous Antshrike

### *Thamnomanes caesi*us

**French:** Batara cendré

**German:** Einfarbwürgerling

**Spanish:** Batará Cinéreo

**Taxonomy.** *Muscicap*a *caesia* Temminck, 1820, Bahia, Brazil.

Relationships to other genera unclear. Species currently placed in genus appear to be related on basis of morphology and behaviour, although their nest architecture is somewhat variable. Forms a superspecies with *T. schistogynus* and formerly treated as conspecific. Five subspecies recognized.

**Subspecies and Distribution.**

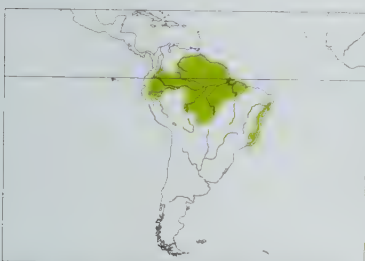
*T. c. glaucus* Cabanis, 1847 - S Venezuela (Bolívar, Amazonas), the Guianas, E Colombia (S from Meta and Vichada), N Brazil (N Amazonas E to Amapá), E Ecuador and NE Peru (N of R Amazon and W of R Ucayali, S to N Ucayali).

*T. c. persimilis* Hellmayr, 1907 - C Brazil S of R Amazon (lower R Jurua and lower R Purus E to left bank of R Tapajós, S to N Rondônia and W Mato Grosso) and extreme NE Bolivia (NE Santa Cruz).

*T. c. similis* Gyldenstolpe, 1951 - SC Amazonian Brazil: known only from middle R Purus.

*T. c. hoffmanni* Hellmayr, 1906 - EC Brazil S of R Amazon (from right bank of R Tapajós E to W Maranhão, S to NE Mato Grosso).

*T. c. caesi*us (Temminck, 1820) - coastal E Brazil (Pernambuco S to Rio de Janeiro, and inland in R Doce drainage in Minas Gerais).



**Descriptive notes.** 14.5 cm; 16–18 g. Male nominate race is rather dark grey, underwing-coverts and inner edges of secondaries white. Female has upperparts and side of head dark olive-brown, small white interscapular patch (lacking on male), wings and tail tinged rufous, throat buff, breast, sides and flanks olive, tinged tawny-cinnamon, centre of belly and crissum tawny-cinnamon. Race *hoffmanni* male is paler than nominate, auriculars and throat feathers with white shaft streaks (sometimes widening into spots on throat), female throat is paler, buff-white with dusky feather bases, flanks less olive, clearer tawny-cinnamon; *persimilis* male is

slightly darker than last and lacks white streaks on auriculars and throat, female tinged cinnamon-rufous throughout, lower breast and rear underparts cinnamon-rufous; *similis* is darker than nominate and has small white interscapular patch, female similar to previous; *glaucus* male has whitish throat, female is tinged rufous throughout with lower breast and rear underparts deep tawny-rufous, both sexes with large white interscapular patch. **VOICE.** Loudsong a moderately long (e.g. 5 seconds) series in which long clear upslurred notes shorten and diminish in pitch, gradually becoming a rattle, initial note shorter, flatter and lower-pitched than second note. Calls include short rattle, typically introduced by distinct clearer note; 2 upslurred notes given in quick succession; and shorter upslurred note, sometimes repeated regularly (e.g. every 0.5 seconds).

**Habitat.** Understorey and mid-storey of lowland evergreen forest, mostly below 600 m; to 900 m in Andes, to 1100 m in tepuis of Venezuela. Occupies both *terra firme* and seasonally flooded (*várzea* and *igapó*) forests; rarely found in second growth.

**Food and Feeding.** Feeds on various insects, including hemipterans, homopterans (Jassidae), beetles (Coleoptera: Chrysomelidae) and ants (Formicidae: Ponerinae), and other arthropods. A sentinel of mixed-species flocks, maintaining flock cohesiveness with its constant noisy vocalizations, sounding alarm when predators appear, and capturing arthropods flushed by nearby perch-gleaning species in flock. Forages in pairs, individually, or in family groups. Perches in upright, vertical posture 1.5–2.0 m above ground on open branches (usually horizontal or inclined) or looping vines, for several seconds to up to 2 minutes at a time, always peering about rapidly. Makes quick, darting sallies of up to 10 m (more often 1–5 m) to take from air prey escaping from other species, or picks items from foliage, stems and vines (less commonly from trunks, rarely from ground), typically continuing flight on to another perch to consume prey; also makes shorter, looping sallies, usually to air, returning to original (or nearby) perch. Tends to take relatively large items, often spending considerable time bashing these on limbs and mandibulating them before swallowing. Often in same flocks as either *T. ardesiacus* or *T. saturninus*, then typically foraging higher above ground than either congener (but some overlap). In areas where no sympatric congeners, and in certain lower-strata habitats (e.g. stands of *Guadua* bamboo), commonly forages as low as 1–5 m above ground and often with understorey flocks that include large numbers of *Myrmotherula* antwrens; in areas of range overlap with other *Thamnomanes*, more often in mid-storey (5–20 m), sometimes associating with woodcreepers (Dendrocolaptidae), foliage-gleaners (Fumariidae), greenlets (*Hylophilus*) and tanagers (Thraupidae). Occasionally follows army ants (*Eciton burckhelli*, *Labidus praedator*), usually for short periods coincident with movement of a mixed-species flock past a swarm, but in absence of either *T. saturninus* or *T. ardesiacus* may follow ants for up to 4 hours; only in open areas of understorey, never in dense micro-habitats; perch heights over ants mostly 1–7 m, occasionally as low as 0–3 m, sallying short distances to air, foliage, stems, trunks, branches and even ground to capture flushed prey.

**Breeding.** Jul–Dec in Brazil and Aug–Dec (once May) in French Guiana. Nest a deep, leafy cup, external diameter 15 cm, depth 5 cm, constructed of dried, rotten leaves, rhizomorphs and fine rootlets, lined with finer plant fibres, fungal (*Marasmius*) fibres and/or dried leaves (overall aspect of a pile of leaves or debris), placed 1–3.5 m up in low sapling or bush, into dead-leaf accumulation in a climber (Cyclanthaceae) on small tree, or on dead leaves accumulated on large leaves of a palm (*Astrocaryum murumuri*); a nest in Brazil (near Belém) was 1–4 m above ground on same species of palm, another 1–8 m up on a vertical support formed by bases of several leaves of the maranthaceous plant guaraná

(*Schinosoph* *ovatus*); some materials identified from one of these nests were leaves of *Tetragastris* (Bursaceae), *Coupia* (Rosaceae) and *Hevea* (Euphorbiaceae) and pieces of pteridophytes (Pteridophyta); a nest in Venezuela was constructed mostly of dead leaves, fibrous plant material and spider webs, 1–8 m above ground on side of slender, spiny-trunked understorey palm, at juncture with a lateral branch. Normal clutch 2 eggs, pinkish-white, blotched and streaked reddish-brown.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Considered fairly common to common throughout most of its large range. This includes numerous parks and reserves, such as the following: Canaima, Duida and Yacacana National Parks, in Venezuela; Brownsberg Nature Park and Raleigh Falls-Voltzberg National Park, in Surinam; Jaú, Pico da Neblina, Tapajós and Monte Roraima National Parks, in Brazil; Yasuni National Park, in Ecuador; Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru; Noel Kempff Mercado National Park, in Bolivia. These protect vast areas of suitable habitat. Nominally race in coastal Brazil is an exception: suitable forest habitats throughout its range have been greatly reduced by deforestation, and preservation of existing parks and forest reserves is vital to maintain population levels of this taxon.

**Bibliography.** Alvarez (1994), Alverson *et al.* (2001), Beebe *et al.* (1917), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Dick *et al.* (1984), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Killen & Schulenberg (1998), Mason (1996), Meyer de Schauensee & Phelps (1978), Munn (1984, 2003), Munn & Terborgh (1979), Novaes (1969, 1970, 1980), Oniki (1971b, 1972a), Oniki & Willis (1972, 1982, 1983b), Oren & Parker (1997), Pearson (1975c), Pinto (1953), Reynaud (1998), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schubert *et al.* (1965), Schulenberg (1983), Scott & Brooke (1985), Sick (1993, 1997), Snyder (1966), Stotz (1990b, 1993), Stotz & Bierregaard (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer & Bierregaard (1995), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Thiollay (1988a, 1994), Tostain (2003), Tostain *et al.* (1992), Wiley (1980), Willis (1977, 1984e), Zimmer, J.T. (1932e), Zimmer, K.J. (2003a).

## 61. Bluish-slate Antshrike

### *Thamnomanes schistogynus*

**French:** Batara bleu-gris

**German:** Blaugrauer Würgerling

**Spanish:** Batará Azulino

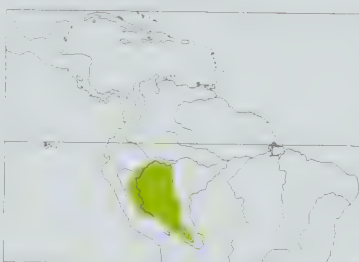
**Taxonomy.** *Thamnomanes caesi*us *schistogynus* Hellmayr, 1911, Cochabamba, Bolivia.

Relationships to other genera unclear. Species currently placed in genus appear to be related on basis of morphology and behaviour, although their nest architecture is somewhat variable. Forms a superspecies with *T. caesi*us and sometimes considered conspecific. Races probably reflect a cline in darkness of plumage, but further study required. Two subspecies recognized.

**Subspecies and Distribution.**

*T. s. intermedius* Carrker, 1935 - C Peru S of R Amazon and E of R Huallaga (S to Junín).

*T. s. schistogynus* Hellmayr, 1911 - W Brazil S of R Amazon (W of lower R Jurua and S to its middle and upper reaches and to upper R Purus), SE Peru (S from Junín) and NW Bolivia (W Pando, La Paz, Cochabamba).



**Descriptive notes.** 13.5–14.5 cm; 16–18 g. Male is darkish grey throughout, except for concealed white interscapular patch; tail sometimes with minute white tips. Female is slightly browner and paler, with belly and flanks deep cinnamon-rufous, auriculars and throat feathers with white shaft streaks. Race *intermedius* is darker. **VOICE.** Loudsong a moderately long series of long upslurred notes that shorten and drop in pitch, gradually becoming a rattle, first note shorter and lower than second; similar in form to that of *T. caesi*us. Calls include a rattle, usually introduced by distinct note sounding like a whine; similar notes given in

succession but varying in form; also a downslurred note, and a soft chatter of variable abrupt notes. **Habitat.** Understorey and mid-storey of lowland evergreen forest, to 1200 m, mostly below 800 m. Occupies both *terra firme* and *várzea* forests, often particularly in light-gaps with abundant bamboo and vine tangles.

**Food and Feeding.** Feeds on insects, including beetles (Coleoptera), katydids (Tettigoniidae), grasshoppers (Acrididae), ants (Hymenoptera), true bugs (Hemiptera), adult and larval lepidopterans, mantids (Mantidae), and other arthropods, including spiders; also small lizards and snails. A sentinel of mixed-species flocks, maintaining flock cohesiveness with its constant noisy vocalizations, sounding alarm when predators appear, and capturing arthropods flushed by nearby perch-gleaning species. Forages in pairs, singly, or in family groups, 1.5–13 m (mostly 3–8 m) above ground, perching in upright, vertical posture on open branches (usually horizontal or inclined), looping vines or angled stems of bamboo; perches for several seconds to up to 2 minutes at a time, peering about rapidly and actively scanning, then making quick darting sallies of 1–5 m to seize in air prey escaping from other species, or hover-gleaning prey from foliage, stems and vines (less commonly from trunks, rarely from ground); typically continues flight on to another perch to consume prey. Also makes shorter, looping sallies, usually to the air, but also repeatedly to foliage to exploit insect infestations or clusters of caterpillars, returning to original (or nearby) perch after each sally. Tends to take relatively large items, often spending considerable time bashing these on limbs and mandibulating them before swallowing. Often in same flocks as either *T. ardesiacus* or *T. saturninus*, depending on location, and usually foraging slightly higher than those, although some overlap.

**Breeding.** Jun–Nov in Peru. Nest a deep, leafy cup of dried, rotten leaves, straw-like material and fine rootlets, lined with finer plant fibres (overall aspect of a pile of leaves or debris); one was placed over a cluster of dead leaves with live vines growing through it 3 m off ground on forked branch of a fallen tree; another was 1 m up at base of a pinnate branch of a tree fern; another was 1 m up in fork of sapling 2–5 cm thick where two small leafy branches diverged from trunk; a fourth was 8 m up along an inclined palm frond where dead *Crotopia* leaves had lodged. Normal clutch 2 eggs, white with reddish or brownish blotches over entire surface; sexes recorded as sharing in feeding of nestlings.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout its range, much of which remains little developed and relatively inaccessible. Range includes some large protected areas, e.g. Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru. Serra do Divisor National Park, in Brazil, and Madidi National Park, in Bolivia.

**Bibliography.** Alverson, Moskovits & Shopland (2000), Alverson, Rodriguez & Moskovits (2001), Cory & Hellmayr (1924), Foster *et al.* (1994), Hilty (2003b), Isler, M.L. & Isler (2003a, 2003b), Isler, P.R. & Whitney (2002), Munn (1984, 1985), Munn & Terborgh (1979), Novaes (1957b), O'Neill (1974), Parker (2003a), Parker & Bailey (1991), Parker & Remsen (1987), Parker *et al.* (1982), Remsen (1986), Ridgely & Tudor (1994), Robbins (2003b), Robinson & Terborgh (1997), Rosenberg (2003), Schulenberg (1983), Servat (1966), Sick (1993), Stotz *et al.* (1996), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Zimmer, J.T. (1932e), Zimmer, K.J. (2003a).





PLATE 50

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# Genus MYRMOTHERULA P. L. Sclater, 1858

## 62. Pygmy Antwren

### Myrmotherula brachyura

**French:** Myrmidon pygmée

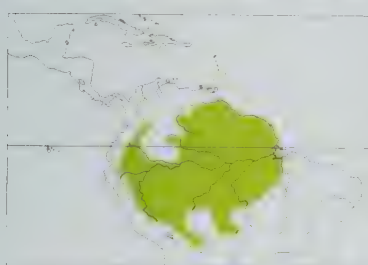
**German:** Östlicher Weißkehl-Ameisenschlüpfer

**Spanish:** Hormiguerito Pigmeo

**Taxonomy.** *Muscicapae* *brachyurae* Hermann, 1783, Cayenne.

Genetic and morphological analyses indicate that this species and *M. ignota*, *M. surinamensis*, *M. multistriata*, *M. pacifica*, *M. cherriei*, *M. klagesi*, *M. longicauda*, *M. sclateri* and *M. ambigua* represent a monophyletic group (the "streaked antwren assemblage"). Present species is closely related to first of those, which was treated as a race of it by earlier authors, but recently shown to differ vocally and in plumage. Studies needed in order to determine whether any diagnosable differences exist among the various populations. Monotypic.

**Distribution.** C & E Colombia (base of Andes S from Meta, and extreme E in Guianá, Vaupés and Amazonas), E Ecuador, E Peru, S Venezuela (Bolívar, Amazonas), the Guianas, Amazonian Brazil (E to R Tocantins, S to N & W Mato Grosso) and NW & NE Bolivia.



**Descriptive notes.** 7.5-8 cm; 6-8 g. Small size, tiny tail. Male has crown and upperparts black, streaked white, streaks faintly tinged yellow except on crown; black postocular stripe, white cheeks; rump grey, unstreaked; white interscapular patch; wings black, median and greater coverts tipped white, flight-feathers edged white; throat white, narrow dark malar streak; underparts yellow, sides sparsely streaked black. Female is like male except for buff tinge on pale areas of head, mantle and breast side, no interscapular patch; throat and breast pale buff in N populations. **Voice.** Loudsong an accelerating, uncountable series of short notes (e.g. 20

notes, 2-3 seconds) that become more abrupt while increasing and then decreasing in pitch and intensity. Calls appear to vary regionally, include short whistles repeated irregularly, a short, rapid musical trill (variable, often slowing and falling in pitch), and abrupt chip, sometimes strung into a rattle.

**Habitat.** Canopy and subcanopy of lowland evergreen forest (including *terra firme*, *várzea* and transitional forest), foothill evergreen forest, and second-growth woodland, to 900 m, mostly below 600 m. Tends to favour edges, including margins of light-gaps (such as treefalls) within intact forest. Primarily in vine tangles and portions of the canopy having dense, multiple overlapping leaf layers; particularly in lower canopy or upper mid-storey. Much more of an edge bird than sympatric *M. sclateri*.

**Food and Feeding.** Feeds on variety of small insects; probably also spiders. Stomach contents of specimens from Brazil and Surinam included lepidopterans, orthopterans (Acrididae), hemipterans, homopterans (Membracidae), coleopterans, hymenopterans (Formicidae). Closely associated partners, individuals, or family groups forage mostly from 8 m to 25 m or more above ground, occasionally lower; in studies at three locations in Peru and Brazil, mean foraging heights were 12.5 m, 10.6 m and 11.8 m. Forages alone or accompanies mixed-species flocks that move through its small territory, dropping out as flock moves on. Often in same flocks as *M. sclateri*, then foraging at lower heights, on average, than that species, but the two occasionally work the same dense vine tangles in interior canopy. Progresses rapidly through vegetation by short hops, seldom pausing for more than 1-2 seconds between movements. Perch-gleans prey from all surfaces of live leaves (mostly), vines and branches, using reaches or quick lunging stabs; also frequently makes short, upward-directed, fluttering sallies to glean prey from undersides of overhanging leaves. Often flicks wings while foraging.

**Breeding.** Little known. In Brazil, female with egg in oviduct in Jun in Acre, and pair feeding fledglings in Jan near Manaus; in Colombia (near Leticia), individual seen building bulky nest c. 6 m above ground in *várzea* on 29 Aug; in N Peru (N of R Amazon), pair carrying whitish strands of grass-like nesting material in Jun.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Considered to be fairly common throughout its extensive range. This includes numerous large parks and reserves in most countries in which it occurs, examples of which are: Caura Forest Reserve and Imataca Forest Reserve and El Dorado, Alto Orinoco-Casiquiare Biosphere Reserve, and Yacacana, Duida and La Neblina National Parks, in Venezuela; Brownsberg Nature Park and Raleigh Falls-Voltzberg National Park, in Surinam; Amacayacu National Park, in Colombia; Serra do Divisor, Jaú and Tapajós National Parks and Cristalino State Park, in Brazil; Yasuni National Park, in Ecuador; Manu National Park and Biosphere Reserve, Tambopata-Candamo Reserved Zone and Pacaya-Samiria National Reserve, in Peru; and Madidi and Noel Kempff Mercado National Parks, in Bolivia. The species' range also contains extensive, intact habitat which, although not formally protected, appears to be at little short-term risk of development.

**Bibliography.** Cory & Hellmayr (1924), Foster *et al.* (1994), Hackett & Rosenberg (1990), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003c), Isler, M.L. *et al.* (1998), Isler, P.R. & Whitney (2002), Meyer de Schauensee & Phelps (1978), Munn & Terborgh (1979), Novaes (1957b), O'Neill & Pearson (1974), Oniki & Willis (1982), Oren & Parker (1997), Parker (2003a), Parker & Bailey (1991), Pearson (1977a), Remsen *et al.* (1986), Reynaud (1998), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Servat (1996), Sick (1993), Stotz (1990b), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Tallman & Tallman (1994), Terborgh *et al.* (1990), Thiollay (1994), Whitney (2003a), Zimmer, J.T. (1932a), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997), Zimmer, K.J., Parker *et al.* (1997).

## 63. Moustached Antwren

### Myrmotherula ignota

**French:** Myrmidon de Griscom

**German:** Westlicher Weißkehl-Ameisenschlüpfer

**Spanish:** Hormiguerito de Griscom

**Other common names:** Griscom's/Colombian Antwren; Short-billed Antwren (*obscura*)

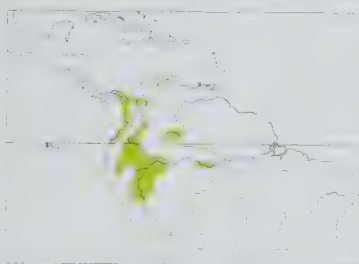
**Taxonomy.** *Myrmotherula brachyura ignota* Griscom, 1929, Jesuito, Darién, Panama.

Genetic and morphological analyses indicate that this species and *M. brachyura*, *M. surinamensis*, *M. multistriata*, *M. pacifica*, *M. cherriei*, *M. klagesi*, *M. longicauda*, *M. sclateri* and *M. ambigua* represent a monophyletic group (the "streaked antwren assemblage"). Present species is closely related to first of those, and nominate race formerly considered conspecific, but differs in vocalizations and plumage. Race *obscura* often treated as a separate species, but vocally indistinguishable from nominate. Two subspecies recognized.

**Subspecies and Distribution.**

*M. i. ignota* Griscom, 1929 - E Panama (Caribbean slope in Canal area and San Blas, Pacific slope in E Panamá and Darién), W & N Colombia (Pacific slope and along N base of Andes E to Santander) and NW Ecuador (Esmeraldas, SW Imbabura, NW Pichincha).

*M. i. obscura* J. T. Zimmer, 1932 - SC & E Colombia (locally along base of Andes S from Meta, and in Guianá and Vaupés), E Ecuador, NE Peru (S to Pasco and Ucayali), and SW & WC Amazonian Brazil (extreme SW S to NW Acre, and EC Amazonas along R Solimões).



**Descriptive notes.** 7.5-8 cm. Small size, tiny tail. Male is black above, narrowly streaked white, faintly tinged yellow except on crown, broad black postocular streak, white cheeks; white interscapular patch; wing-coverts tipped white, flight-feathers edged white; throat white, broad dark malar streak; underparts yellow, sides sparsely streaked black. Distinguished from similar *M. brachyura* mainly by broader malar streak, more prominent post-ocular streak, more extensive black on upperparts. Female is like male except light streaks on crown and side of head buff to tawny-buff, no interscapular patch. Race

*obscura* male differs from nominate in having fewer pale streaks above, female head, throat and breast more buffy. **Voice.** Loudsong an accelerating series of short notes increasing and then decreasing in pitch and intensity, similar in pattern to that of *M. brachyura* but pace slower and notes, although still uncountable, are more musical, less abrupt. Call a short, uneven, downslurred whistle; *obscura* also an abrupt note (not yet recorded for nominate race).

**Habitat.** Canopy and subcanopy of lowland evergreen forest, nominate race also in taller second-growth woodland; mainly below 600 m, but locally to 1100 m in Panama and to 900 m in W & N Colombia (nominate). Found primarily at forest borders with tall trees, or at margins of light-gaps (large treefalls) and stream edges within continuous forest. Race *obscura* occurs in both *terra firme* and *várzea*; more commonly found in canopy of continuous forest than is frequently syntopic *M. brachyura*.

**Food and Feeding.** Little published; most information pertains to race *obscura*. Feeds on variety of small insects, particularly lepidopteran larvae; probably also spiders. Closely associated pair-members, individuals, or family groups forage mostly 10-40 m above ground, in denser foliage and vine tangles from canopy down to lower mid-storey and crowns of saplings; stays higher in unbroken forest, descending lower along borders, stream edges, clearings, and wherever there are breaks in the canopy. Forages alone or with mixed-species flocks of insectivores. Very active, hitching from side to side as it zigzags through vines and slender branches, scanning foliage as it goes, seldom pausing for more than 1-2 seconds between hops, constantly flicking wings. Perch-gleans prey from leaf, stem, moss, twig and vine surfaces by reaching or by quick lunging stabs; often makes short fluttering sallies, mostly upwards to underside of overhanging vegetation, and occasionally hover-gleans. Race *obscura* sometimes in same mixed flocks as *M. brachyura*; ecological distinctions between the two taxa not well understood, but *obscura* may follow flocks more faithfully and for longer distances, particularly in unbroken canopy.

**Breeding.** Previously unpublished observation of nest-building by pair in Aug in N Peru (*obscura*): nest a small bag c. 6 cm wide and 6 cm deep, constructed entirely of jagged bright green lichen and spider webs, suspended c. 9 m off ground in fork of slender twigs c. 0.5 cm thick on leafy branch near crown centre of tree 12 m tall, surrounded by taller (25 m) trees, in *terra firme* forest.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Generally considered uncommon to fairly common throughout its range, which includes a number of formally protected parks and reserves. Among these are Soberanía and Darién National Parks, the Atlantic-coast forest (Colón) and Comarca Kuna Yala Indigenous Reserve (San Blas), in Panama, and Los Katios National Park, in Colombia; and, for race *obscura*, Yasuni National Park, Limoncocha Biological Reserve and Cuyabeno Reserve, in Ecuador, and Pacaya-Samiria National Reserve, in Peru. This inconspicuous, subcanopy-dwelling antbird is easily overlooked. Nominative race, in particular, is probably more widespread within its range than current scatter of records would indicate; this already proven to be the case in NW Ecuador, where number of records and known sites has increased markedly since the species was first discovered there, in 1995. Much of this species' range has been little affected by human disturbance to date, although intensified oil exploration and concomitant road-building and human colonization in much of E Ecuador, along with completion of the Pan-American highway in Panama-Colombia, pose potential future threats.

**Bibliography.** Álvarez (1994), Alverson *et al.* (2001), Butler (1979), Eisenmann (1952), Hackett & Rosenberg (1990), Hilty (1997), Hilty & Brown (1986), Isler, M.L. & Isler (2003a, 2003c), Isler, M.L. *et al.* (1998), Isler, P.R. & Whitney (2002), Karr (1971a, 1977), Parker (2003a), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Sick (1993), Stotz *et al.* (1996), Wetmore (1972), Whitney (2003a, 2003b), Zimmer, J.T. (1932a), Zimmer, K.J. (2003a).

## 64. Guianan Streaked Antwren

### Myrmotherula surinamensis

**French:** Myrmidon du Surinam

**German:** Guayana-Strichelameisenschlüpfer

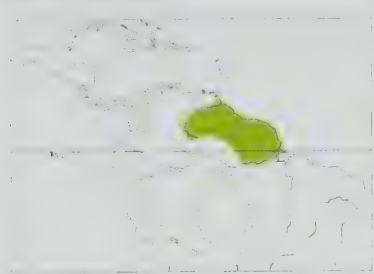
**Spanish:** Hormiguerito de Surinam

**Taxonomy.** *Sitta surinamensis* J. F. Gmelin, 1788, Surinam.

Considered a sister-species of *M. multistriata*; until recently was treated as conspecific with that and also with *M. pacifica*, but vocal and plumage characters indicate that they are all separate species. Genetic and morphological analyses indicate that all three species are part of a monophyletic group that also includes *M. brachyura*, *M. ignota*, *M. cherriei*, *M. klagesi*, *M. longicauda*, *M. sclateri* and *M. ambigua* (the "streaked antwren assemblage"). Monotypic.



**Distribution.** S Venezuela (S Delta Amacuro, Bolívar, Amazonas), the Guianas and N Brazil (E Roraima E to Amapá).



**Descriptive notes.** 9-10 cm; 7.5-9 g. Male has crown and upperparts black, streaked white; wing-coverts tipped white, flight-feathers edged white; white interscapular patch broad (nearly entire width between scapulars); tail black, edged white, tips spotted white; thin malar streak black, throat and anterior underparts white, flanks and crissum grey, black streaks extending from throat to belly and flanks. Female differs from male in having top of head cinnamon-rufous, crown and nape streaked black, side of head, breast and sides orange-buff, head side faintly streaked, no malar streak, lower underparts faintly tinged

buff, underparts unstreaked or with band of fine streaks across breast and sides. **Voice.** Loudsong a rattle or trill of unmusical notes, initially rises in intensity and pitch and then decelerates slightly. Stereotyped call a distinctive, song-like but rapidly delivered series of short notes (e.g. 8 notes, 1-2 seconds) that rises and falls in pitch. Calls include slightly downslurred, complaining note, often given in doublet with second note shorter and lower; also short rattle, and single, abrupt "chit".

**Habitat.** Understorey and mid-storey of lowland evergreen-forest edge and shrubby second growth, to 450 m. Almost entirely a water-edge species, inhabiting shrubby thickets and vine tangles overlooking banks of rivers, streams and ponds; also in mature mangroves where rivers empty into sea in French Guiana. Occasionally found in shrubby borders of forest or large forest clearings away from water.

**Food and Feeding.** Little published. Feeds mostly on small insects, particularly small lepidopteran larvae, and spiders; stomach contents of Surinam specimens included spiders, hemipterans, homopterans (Jassidae), also berries. Forages in pairs or individually in leafy shrubs, crowns of saplings, vine tangles surrounding trunks of larger trees, and dead branches of fallen or partially submerged trees, mostly 1-15 m above ground or water. Very active, hitching from side to side as it zigzags through vegetation, often changing direction and retracing route, scanning as it goes, seldom pausing for more than 1-2 seconds between movements. Prey gleaned from tops and bottoms of live leaves, stems, vines and branches, by reaches and quick lunging stabs, as well as by short, upward-directed, fluttering sallies to underside of overhanging vegetation. May briefly join passing mixed-species flocks.

**Breeding.** Little known. Four nests in French Guiana in Aug-Oct (previously unpublished data); pair of adults with two fledglings just out of nest in late Feb in Surinam; adults with closely associated juveniles recorded in early Feb in Brazil (Amapá). In French Guiana, nest covered externally with green moss, placed on branch 0.5-1 m above water; 2 eggs, whitish, ring of violaceous-brown splotches on blunt end. Other eggs described as creamy yellow with purplish-brown and purplish-grey spots, but description requires confirmation.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout most of its range, which includes extensive areas of intact habitat and some large, protected areas, e.g. Yapacana, Duida and La Neblina National Parks and Alto Orinoco-Casiquiare Biosphere Reserve, in Venezuela. Although relatively few of the areas occupied by this species are formally protected, the bulk of its range has suffered little from development and human colonization. The ability of this species to persist in shrubby second-growth habitats makes it less sensitive to disturbance than many other forest species.

**Bibliography.** Cory & Hellmayr (1924), Gyldenstolpe (1930b), Hackett & Rosenberg (1990), Haverschmidt & Mees (1994), Hilty (2003a), Isler, M.L. *et al.* (1998, 1999), Isler, P.R. & Whitney (2002), Meyer de Schauensee & Phelps (1978), Oniki (1971b), Ridgely & Tudor (1994), Ridgway (1911), Schönwetter & Meise (1967), Sick (1993), Snyder (1966), Stotz *et al.* (1996), Tallman & Tallman (1994), Tostain (1986a, 2003), Tostain *et al.* (1992), Zimmer (2003a), Zimmer & Hilty (1997).

## 65. Amazonian Streaked Antwren

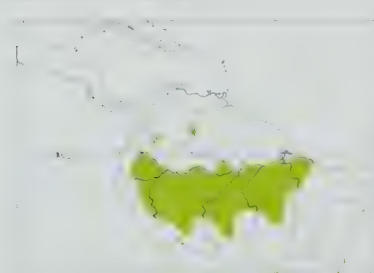
### *Myrmotherula multostriata*

**French:** Myrmidon strié **Spanish:** Hormiguerito Amazónico  
**German:** Amazonien-Strichelameisenschlüpfer

**Taxonomy.** *Myrmotherula multostriata* P. L. Sclater, 1858, Rio Ucayali, Peru.

Considered a sister-species of *M. surinamensis*, and until recently was treated as conspecific with that and also with *M. pacifica*, but vocal and plumage characters indicate that they represent three separate species. Genetic and morphological analyses indicate that all are part of a monophyletic group that also includes *M. brachyura*, *M. ignota*, *M. cherriei*, *M. klagesi*, *M. longicauda*, *M. sclateri* and *M. ambigua* (the "streaked antwren assemblage"). Monotypic.

**Distribution.** Locally in E Colombia (Meta), S Venezuela (extreme W Amazonas), and from E Ecuador and NE & E Peru E across C Brazil (E to extreme W Maranhão and N Tocantins, extending N of R Amazon only in area W of lower R Negro and also NE of Manaus) and S to Mato Grosso and NW & NE Bolivia.



**Descriptive notes.** 9-10 cm; 7.5-9 g. Male is black above, streaked white, wing-coverts tipped white, flight-feathers edged white, broad white interscapular patch, tail edged and tipped white; thin black malar streak, white underparts, greyer on flanks and crissum, black streaks from throat to belly and flanks. Barely distinguishable from extremely similar *M. surinamensis*, but tendency for black streaks below to be thinner (variable). Female differs from male in having top of head cinnamon-rufous, crown and nape streaked black, side of head, breast and sides buff, rest of underparts faintly buff-tinged; distinguished from females

of *M. surinamensis* and *M. cherriei* by very thin black malar streak and extensive thin (1 mm wide or less) streaking of underparts. **Voice.** Loudsong an unmusical rattle or trill, first rising in intensity and pitch and then slowing slightly, similar to that of *M. surinamensis* but typically slightly slower in pace. Stereotyped call a rising and falling series of short, song-like notes, differing from that of *M. surinamensis* in that notes are much longer and pace much slower. Call a flat complaining note, often in a doublet with second note shorter.

**Habitat.** Understorey and mid-storey at edges of seasonally flooded lowland evergreen forest (*várzea* and *igapó*) and adjacent shrubby second growth, to 550 m. In most areas, virtually confined to a narrow band of shrubby, vine-tangled vegetation immediately bordering rivers, streams and oxbow lakes.

**Food and Feeding.** Little published. Feeds on small insects, especially small lepidopteran larvae, and spiders. Pairs or individuals forage mostly 1-15 m up in dense foliage and vine tangles overhanging water, often in crowns of more open shrubs and trees with bases submerged in standing water; seldom found more than 50 m away from water's edge. Very active, hitching rapidly from side to side in zigzag progression, twitching wings and tail, frequently retracing its route and scanning foliage for prey as it goes, seldom pausing longer than 1-2 seconds between movements. Most prey perch-gleaned from leaves (particularly from upper surfaces) by reaches or lunging stabs; less frequently, perch-gleans from stem and vine surfaces and makes short, upward-directed fluttering sallies to underside of overhanging vegetation. May briefly join passing mixed-species flocks.

**Breeding.** Jul-Dec in Amazonian Brazil; nest records from Colombia in Jul and Bolivia (Pando) in Jun. Nest described as a small cup or pouch of green mosses and filamentous vegetable matter, decorated with dried leaves (particularly of *Heliconia*) and strands of white fungus-like material, or as a cup woven of blackish fibres heavily decorated with green moss, in each case suspended c. 0.4-3 m above water from fork in slender branch of small tree or shrub growing on bank of river, stream or lagoon. Normal clutch 2 eggs, white, with purple, brownish-purple or blackish spots and streaks concentrated in wreath at blunt end; incubation by both parents during day, presumably only by female at night.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of its extensive range. This encompasses vast areas of intact habitat, including several large, protected areas, e.g. Manu National Park and Biosphere Reserve, in Peru, and Serra do Divisor, Jauú and Tapajós National Parks and Cristalino State Park, in Brazil. The bulk of its range has been little affected by development or human colonization. This species' ability to persist in shrubby second-growth habitats makes it less sensitive to disturbance than many other forest species.

**Bibliography.** Cadena, Londoño & Parra (2000), Cory & Hellmayr (1924), Gyldenstolpe (1930b), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. *et al.* (1998, 1999), Isler, P.R. & Whitney (2002), O'Neill & Pearson (1974), Oren & Parker (1997), Parker (2003a), Parker & Remsen (1987), Pinto (1953), Remsen & Parker (1983), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Servat (1996), Sick (1993, 1997), Sneath (1935), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Zimmer, J.T. (1932a), Zimmer, K.J. (2003a), Zimmer, K.J., Parker *et al.* (1997).

## 66. Pacific Antwren

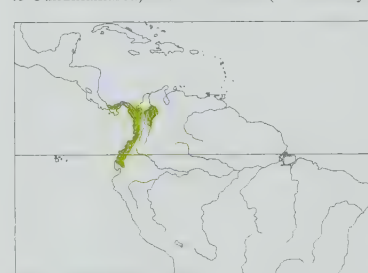
### *Myrmotherula pacifica*

**French:** Myrmidon du Pacifique **Spanish:** Hormiguerito del Pacífico  
**German:** Westlicher Strichelameisenschlüpfer  
**Other common names:** Pacific Streaked Antwren

**Taxonomy.** *Myrmotherula surinamensis pacifica* Hellmayr, 1911, Buenaventura, Valle del Cauca, Colombia.

Until recently considered conspecific with *M. surinamensis* and *M. multostriata*, but vocal and plumage characters indicate that they are separate species; appears to be most closely related to *M. cherriei*. Genetic and morphological analyses indicate that all four species are part of a monophyletic group that also includes *M. brachyura*, *M. ignota*, *M. klagesi*, *M. longicauda*, *M. sclateri* and *M. ambigua* (the "streaked antwren assemblage"). Monotypic.

**Distribution.** Panama (E from E Bocas del Toro on Caribbean slope, from Panamá on Pacific slope), W & N Colombia (Pacific slope, N base of Andes E to Santander, and Magdalena Valley S to Cundinamarca) and W Ecuador (S to E Guayas, Chimborazo and NW Azuay).



**Descriptive notes.** 9-10 cm; 8.5-10 g. Male is black above, streaked white, wing-coverts tipped white, flight-feathers edged white, white interscapular patch, tail feathers edged and tipped white; thin black malar streak, white throat and underparts, greyer on flanks and crissum, black streaks from throat to belly and flanks. Distinguished from very similar *M. surinamensis* by narrower interscapular patch (less than half distance between scapulars). Female differs from male in having head and upper mantle cinnamon-rufous to buff, crown and nape streaked black, no interscapular patch, no malar streak, breast orange-ochre,

throat and centre of belly pale buff, no streaks below. Subadult male is intermediate between adult male and female. **Voice.** Short series of sharp, unmusical notes that rise slightly in pitch and accelerate slightly. Calls include short scratchy note, often delivered in doublets or triplets, and clearer whistle, also doubled or tripled, notes dropping in pitch and becoming shorter.

**Habitat.** Understorey and mid-storey of lowland and foothill evergreen-forest edge, riparian thickets, and tall, shrubby second growth; to 800 m, occasionally to 1300 m. Typically in second growth and vine-tangled forest borders, often in riparian situations; not found in forest interior, except in light-gaps with dense second growth. Sometimes ventures into adjacent disturbed, more open habitats, such as gardens or plantations.

**Food and Feeding.** Little published. Feeds on small insects and spiders. Pairs or individuals move actively through leafy branches of trees and shrubs, mostly 2-10 m above ground, occasionally down to 1 m or as high as 17 m; progresses by short hops, scanning foliage as it goes, seldom pausing for more than 1-2 seconds between movements. Prey gleaned from leaf, stem and vine surfaces by reaches and by lunging stabs; also by short sallies, these mostly upward and fluttering to undersides of overhanging leaves. May briefly join mixed-species flocks as they pass through its territory.

**Breeding.** Jan-Jul in Panama; a nest in Mar in Colombia. Nest a thin-walled cup of loosely woven green vines, slender filaments resembling aerial rootlets of some epiphytes, or fine grasses, sometimes decorated with leaves or moss, suspended by rim from horizontal fork between two or more narrow branches, often near tip of branch, among foliage 2-6 m above ground. Normal clutch 2 eggs, described as variously greyish-white or white, washed with buff, heavily speckled and mottled with cinnamon-brown, dark brown and lilac-grey, with heavier wreath around larger end and only faintly marked on smaller end, to pale greenish-white without gloss or markings.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout its range, which does include several protected areas: examples of these are Soberanía and Darién National Parks, Comarca Kuna Yala Indigenous Reserve and Atlantic Forest (Colón), in Panama, Los Katios National Park, in Colombia, and Rio Palenque Science Centre and Tinalandia, in Ecuador. Occupies a



variety of shrubby forest-edge and second-growth habitats, making it less sensitive than most antbirds to human disturbance.

**Bibliography.** Cory & Hellmayr (1924), Eisenmann (1952), Gyldenstolpe (1930b), Hackett & Rosenberg (1990), Hilty & Brown (1986), Isler, M.L. *et al.* (1999), Isler, P.R. & Whitney (2002), Oates & Reid (1903), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Sclater & Salvin (1879), Stone (1918), Stotz *et al.* (1996), Wetmore (1972), Zimmer (2003a).

## 67. Cherrie's Antwren

### *Myrmotherula cherriei*

**French:** Myrmidon de Cherrie

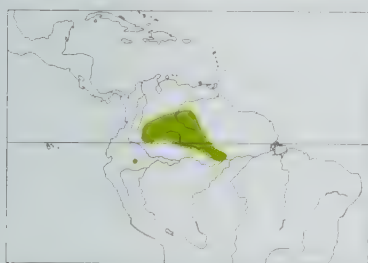
**Spanish:** Hormiguerito de Cherrie

**German:** Weißstreifen-Ameisenschlüpfer

**Taxonomy.** *Myrmotherula cherriei* Berlepsch and Hartert, 1902, Puerto Ayacucho, Amazonas, Venezuela.

Appears to be most closely related to *M. pacifica*. Genetic and morphological analyses indicate that both species are part of a monophyletic group that also includes *M. brachyura*, *M. ignota*, *M. surinamensis*, *M. multistriata*, *M. klagesi*, *M. longicauda*, *M. sclateri* and *M. ambigua* (the "streaked antwren assemblage"). Monotypic.

**Distribution.** SE Colombia (E Vichada, Meta, Guianá, Caquetá), SW Venezuela (Amazonas), NE Peru (Loreto N of R Marañón) and NW Brazil (R Negro drainage).



**Descriptive notes.** 9-10 cm; 7.5-9 g. Male is black above, streaked white, wing-coverts tipped white, flight-feathers edged white, white interscapular patch, tail feathers edged and tipped white; indistinct black malar streak, white throat and underparts, greyer on flanks and crissum, black streaks from throat to belly and flanks. Distinguished from very similar *M. surinamensis* by much narrower interscapular patch (less than half distance between scapulars). Female differs from male in having head streaks pale buff, no interscapular patch, pale buff underparts with streaks slightly thinner (1.5-2 mm wide on breast, narrower below). Subadult male

is intermediate between adult male and female. **VOICE.** Loudsong an unmusical rattle, similar to that of *M. surinamensis* and *M. multistriata* but pitch rises more noticeably throughout and pace remains constant. Call a downslurred emphatic "tchew" (unique among the "streaked antwrens").

**Habitat.** Understorey and mid-storey of stunted, poorly drained woodland on white-sand soils; to 550 m, one record at 800 m. In some areas also in dense thickets and palm-filled borders of seasonally flooded gallery forest in savanna regions, these often occurring as "islands" of trees dissected by small streams. Also ranges from savanna woodland and shrubby borders into adjacent taller *várzea* forest at ecotones. Appears confined to shrubby thickets that border island lagoons and sandbars in the Anavilhanas Archipelago of R Negro (Brazil), and to borders of streams and lagoons in N Peru.

**Food and Feeding.** Not well known. Feeds on variety of small insects, particularly small lepidopteran larvae; also spiders. Forages as closely associated pair-members, or singly, mostly 1-7 m above ground (ascending to 10 m or more in taller forest), flicking wings constantly and hitching rapidly from side to side through thin, leafy branches and hanging vines. Perch-gleans from live leaves and vines by reaches or lunging stabs, or making short (to 15 cm) jumping sallies to undersides of overhanging leaves. Often joins mixed-species flocks; in Venezuela, frequent flock associates include *Thamophilus amazonicus*, *Sakesphorus canadensis*, *Formicivora grisea*, Yellow-breasted Flycatcher (*Tolmomyias flaviventris*), Brown-headed Greenlet (*Hylophilus brunneiceps*), Tropical Gnatcatcher (*Poliotila plumbea*), and a variety of honeycreepers and tanagers (Thraupidae); in Jaú National Park, in Brazil, frequent associates include *Hypocnemoides melanopogon*, Tropical Gnatcatcher (*Poliotila plumbea*) and Grey-chested Greenlet (*Hylophilus semicinctus*).

**Breeding.** Little known. Nest found in Brazil (Jaú) in Sept (details previously unpublished): described as a pendent bag or cup c. 6 cm deep and 4 cm wide, constructed of unidentified plant materials, placed c. 3 m off ground in 4-m tree at edge of a large flooded area (within 5 m of water's edge) in low-stature woodland with essentially no understorey and rather openly spaced, mostly thin-trunked trees 4-7 m tall (known locally as *chavascal*); female seen leaving nest, and male carrying food nearby. Another nest, observed in Apr in Colombia (Meta), was on a low dead limb hanging over water.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Locally fairly common, although patchily distributed throughout its range. Some large protected areas exist within its range, e.g. Yacapana National Park and adjacent indigenous reserves, in Venezuela, Rio Negro State Park and Jaú National Park, in Brazil, and Allpahuayo-Mishana Reserved Zone, in Peru. The recent discovery of this species in the Anavilhanas Archipelago and the expansive (22,720 km<sup>2</sup>) Jaú National Park extends considerably its known range. In Venezuela and NW Brazil, the sandy-soil habitats and *igapó* scrub occupied by this little-known thamnophilid are currently among the areas of Amazonia that have been least settled and least affected by humans. The situation is different in NE Peru, where sandy-soil habitats are being heavily exploited by expanding human populations.

**Bibliography.** Álvarez (1994), Borges *et al.* (2001), Cory & Hellmayr (1924), Gyldenstolpe (1930), Hackett & Rosenberg (1990), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. *et al.* (1998, 1999), Isler, P.R. & Whitney (2002), Ridgely & Tudor (1994), Sick (1993), Stiles *et al.* (1995), Stotz *et al.* (1996), Whitney & Cohn-Haft (2003), Zimmer (2003a), Zimmer & Hilty (1997).

## 68. Klages's Antwren

### *Myrmotherula klagesi*

**French:** Myrmidon de Klages

**Spanish:** Hormiguerito de Klages

**German:** Rio Negro-Ameisenschlüpfer

**Taxonomy.** *Myrmotherula klagesi* Todd, 1927, Santarém, Pará, Brazil.

Vocalizations suggest that this and *M. longicauda* are sister-species. Genetic and morphological analyses indicate that both species are part of a monophyletic group that also includes *M. brachyura*, *M. ignota*, *M. surinamensis*, *M. multistriata*, *M. pacifica*, *M. cherriei*, *M. sclateri* and *M. ambigua* (the "streaked antwren assemblage"). Monotypic.

**Distribution.** C Amazonian Brazil on extreme lower R Branco, lower R Negro and E along R Amazon, including lower R Madeira, to mouth of R Tapajós.



**Descriptive notes.** 9-10 cm; 7.5-8.5 g. Male is black above, streaked white, wing-coverts tipped white, flight-feathers edged white, tail (only 10 feathers) edged and tipped white; indistinct black malar streak, white throat and underparts, greyer on flanks and crissum, black streaks from throat to belly and flanks. Distinguished from very similar *M. surinamensis* by lack of white interscapular patch, 10 (rather than 12) rectrices. Female differs from male in having head and upperpart streaks pale buff, underparts buff, slightly darker on breast, with streaks shorter and confined to breast and sides (sometimes extending faintly to throat and

middle of belly). **VOICE.** Loudsong a series of paired notes, second note shorter and almost always higher-pitched than first (sometimes only one of the two is given), repeated at same pitch and pace, number of pairs varies, often six. Calls include pair of abrupt notes, second lower-pitched, and long, somewhat downslurred whistle.

**Habitat.** Canopy and subcanopy of seasonally flooded (*igapó* and *várzea*) lowland evergreen forest, to 100 m. Favours river-edge forest, perhaps especially on river islands. Although primarily an occupant of higher forest strata, routinely descends much lower at edges.

**Food and Feeding.** Nothing published. Feeds on lepidopteran larvae, various small orthopterans, mantids, true bugs (Hemiptera) and other insects; also spiders. Forages in pairs or individually, mostly in dense foliage, particularly where overlapping vine tangles and leafy canopies of understorey and mid-storey trees form mats of vegetation, these most commonly overhanging water at forest edge. Typically in canopy or subcanopy (to 20 m or more); at forest edges and light-gaps within forest utilizes all levels, frequently descending to within 2-3 m (occasionally lower) of ground or water. Forages actively, progressing by short hops, with only brief pauses (usually 1 second or less) to scan for prey; typically, moves rapidly through vegetation on irregular, zigzag path, hitching from side to side along slender horizontal and vertical branches and vines, habitually flicking both wings, and usually working individual trees or shrubs methodically before moving on. Prey most frequently perch-gleaned from live leaves (particularly from undersides), stems or vines by lunging stabs or reaches, these usually upward-directed, with legs extended and neck stretched; capture typically accompanied by an audible snap of mandibles. Also regularly makes short, upward-directed sallies to hover-glean or flutter-glean items from underside of overhanging vegetation, before dropping back to near original perch; less frequently longer sallies (to c. 1 m) without hovering or fluttering at point of capture, then continuing on to new perch. Often flutters rapidly downwards through several layers of foliage to pursue flushed or dislodged prey. Regularly accompanies mixed-species flocks of other insectivores.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species; present in Amazon Flooded Forests EBA. The species is fairly common to common throughout much of the extensive river-island system that comprises the Anavilhanas Archipelago, and this area is formally protected as the Anavilhanas Ecological Station (3350 km<sup>2</sup>), which falls within the Rio Negro State Park (4360 km<sup>2</sup>). These areas are large, mostly pristine, and under little threat; as such, they protect a large, viable population of the species. The small range of this thamnophilid is, however, a cause for concern. Although the species is probably widespread on river islands with appropriate habitat from the mouth of R Negro to the mouth of R Tapajós, there have been few recent surveys in these areas. More survey work is needed in order to locate any additional populations of this species, including in the Santarém region from which the historical records originate.

**Bibliography.** Cohn-Haft (2003b), Cohn-Haft & Whitney (2003a), Collar *et al.* (1994), Gyldenstolpe (1930b), Hackett & Rosenberg (1990), Isler & Whitney (2002), Ridgely & Tudor (1994), Sick (1993), Stattersfield & Capper (2000), Stotz *et al.* (1996), Whittaker (2003a), Zimmer (2003a).

## 69. Stripe-chested Antwren

### *Myrmotherula longicauda*

**French:** Myrmidon à ventre blanc

**Spanish:** Hormiguerito Pechilistado

**German:** Weißbauch-Ameisenschlüpfer

**Taxonomy.** *Myrmotherula longicauda* Berlepsch and Stolzmann, 1894, Chontabamba, La Merced and La Gloria, Junín, Peru.

Vocalizations suggest that this and *M. klagesi* are sister-species. Genetic and morphological analyses indicate that both are part of a monophyletic group that also includes *M. brachyura*, *M. ignota*, *M. surinamensis*, *M. multistriata*, *M. pacifica*, *M. cherriei*, *M. sclateri* and *M. ambigua* (the "streaked antwren assemblage"). Plumage distinctions among races are not entirely clear, and ranges listed below are tentative; further, taxonomic status of recently discovered population inhabiting lowland flooded forest in Loreto (Peru) uncertain; further study required. Four subspecies recognized.

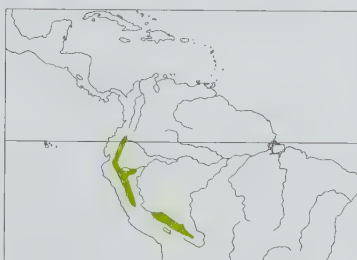
**Subspecies and Distribution.**

*M. l. soderstromi* Gyldenstolpe, 1930 - E slope of Andes in S Colombia (Putumayo) and N Ecuador (Napo).

*M. l. pseudoaustralis* Gyldenstolpe, 1930 - E slope in S Ecuador (Morona-Santiago, Zamora-Chinchepe) and N Peru (S to Pasco).

*M. l. longicauda* Berlepsch & Stolzmann, 1894 - C Peru (Junín).

*M. l. australis* Chapman, 1923 - SE Peru (Cuzco, Madre de Dios, Puno) and NW Bolivia (La Paz, S Beni, Cochabamba).



**Descriptive notes.** 9-10 cm; 8-9.5 g. Male is black above, streaked white, wing-coverts tipped white, flight-feathers edged white, tail (only 10 feathers) edged and tipped white; distinct black malar streak, white below, greyer on flanks and crissum, black streaks on breast and flanks. Distinguished from very similar *M. surinamensis* by more distinct malar stripe, lack of white interscapular patch, underpart streaking in more distinct band across breast, 10 (rather than 12) rectrices. Female differs from male in having pale streaks, tips and edgings above often buff-tinged, throat and underparts pale buff, more ochraceous across breast, thinner black streaks on sides but no or few faint spots or streaks on breast centre. Races



differ from nominate in plumage of female; *australis* is deeper ochraceous buff throughout, especially surrounding upperpart streaks and on breast; *pseudoaustralis* is similar to previous but wingbars very pale; *soderstromi* is also similar but has belly white. VOICE. Loudsong a series of paired notes, second note usually lower in pitch than first, repeated variable number of times, overall pitch typically higher than that of *M. klagesi*. Calls include clear long whistle, sharply downslurred and then flattening out, often immediately preceded by 1-3 abrupt notes, also abrupt notes given singly or in pairs, very different from *M. klagesi*.  
**Habitat.** Understorey and mid-storey of foothill and lower montane evergreen-forest edge and second-growth woodland; primarily in foothills, mostly at 400-1300 m, but ranges as high as 1800 m, and occurs locally near base of Andes down to 150 m. Favours shrubby forest borders, regenerating clearings, and swampy, riparian thickets. Recently discovered lowland population in Peru (Pacaya-Samiria National Reserve, in Loreto) inhabits permanently flooded stunted forest, 5-6 m tall, with stagnant bodies of black water.

**Food and Feeding.** Little published. Feeds on small insects and spiders. Forages in pairs or individually, 1-15 m above ground, mostly 2-8 m, in shrubby thickets, leafy crowns of understorey saplings, and mid-storey vine tangles, occasionally in dead-leaf clusters. Very active, hitching from side to side in zigzag progression, scanning foliage as it goes, seldom pausing for more than 1-2 seconds between hops. Prey gleaned from leaf, stem and vine surfaces by reaches, lunging stabs, and short, mostly upward-directed, fluttering sallies. Frequently alone, but often in mixed-species flocks, at lower elevational limits mainly of other antwrens and foliage-gleaners (Fumariidae), but at higher elevations often with flocks dominated by tanagers (Thraupidae) and tyrant-flycatchers (Tyrannidae).

**Breeding.** Nothing known.  
**Movements.** None recorded; presumed resident.

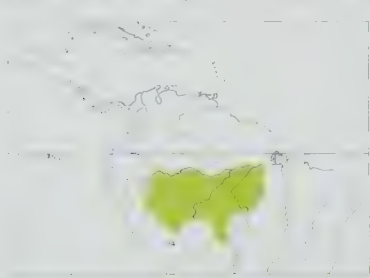
**Status and Conservation.** Not globally threatened. Fairly common throughout most of its reasonably large range. This includes some large protected areas, e.g. Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru; also many smaller ones, particularly in E Ecuador. In Peru, was considered to be locally fairly common in the large (2,080,000 ha) Pacaya-Samiria National Reserve, where the lowland flooded-forest habitat occupied by this disjunct population is atypical for the species. In general, the lower Andean slopes to which this species is mostly restricted are some of the areas most at risk from deforestation and cultivation by an ever-expanding human population; even common species should, therefore, be considered at some risk and worthy of monitoring. The species' ability to tolerate forest-edge and second-growth woodland renders it less sensitive to human disturbance than many other antbirds.

**Bibliography.** Begoza & Valqui (1998), Cory & Hellmayr (1924), Foster *et al.* (1994), Gylstenstolpe (1930b), Hackett & Rosenberg (1990), Hilty & Brown (1986), Isler, M.L. *et al.* (1999), Isler, P.R. & Whitney (2002), Parker (2003a), Parker & Bailey (1991), Perry *et al.* (1997), Remsen & Parker (1984), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Stotz *et al.* (1996), Zimmer, J.T. (1932a), Zimmer, K.J. (2003a).

70. Sclater's Antwren  
*Myrmotherula sclateri*

French: Myrmidon de Sclater Spanish: Hormiguerito de Sclater  
German: Gelbstreifen-Ameisenschlupfer

**Taxonomy.** *Myrmotherula sclateri* Sneath, 1912, Boim, Rio Tapajós, Pará, Brazil.  
Forms a superspecies with *M. ambigua*. Genetic and morphological analyses indicate that both species are part of a monophyletic group that also includes *M. brachyura*, *M. ignota*, *M. surinamensis*, *M. multistriata*, *M. pacifica*, *M. cherriei*, *M. klagesi* and *M. longicauda* (the "streaked antwren assemblage"). Form described as *M. kermiti* ("Kermit's Antwren") was based on variants of present species. Monotypic.  
**Distribution.** E Peru (S of R Amazon, E of R Ucayali), S Amazonian Brazil (E to lower R Xingu and S to N Mato Grosso) and NW & NE Bolivia (Pando, N La Paz, NE Santa Cruz).



**Descriptive notes.** 8-8.5 cm; 8-10 g. Male is black above, crown streaked light yellow, upperparts streaked whitish, light yellow interscapular patch, two prominent white wingbars, tail feathers edged white, narrowly tipped white; cheeks to breast yellow, prominent black malar streak, rest of underparts paler, few black streaks on breast sides. Female is similar to male, but pale colours on head and breast often more ochraceous, and usually more streaks below; some individuals, especially in S Amazonia, vary in amount of streaking on underparts (sometimes limited to sides), intensity of ochraceous colour on head,

and blackness of crown streaks ("Kermit's Antwren"). VOICE. Loudsong a long, somewhat mournful note slowly repeated (e.g. 5 notes, 3-8 seconds) at even pace and pitch, notes slightly shorter than spaces between them.

**Habitat.** Canopy of lowland evergreen forest (*terra firme*, *várzea*, transitional), to 550 m. Less of an edge bird than sympatric *M. brachyura*, and more indicative of continuous forest.

**Food and Feeding.** Little published. Feeds on various insects, including lepidopteran larvae and katydids (Tettigoniidae); probably also spiders. Usually encountered as closely associated pair-members or family groups, almost always with large mixed-species canopy flocks of tanagers (Thraupidae), furnariids, tyrant-flycatchers (Tyrannidae) and other insectivores. Forages mostly from 15 m above ground (sometimes descending lower at forest edges) up to the canopy, most often in small leaves and branches of upper canopy (like *Terenura*); mean foraging height at a site in Brazil was 17.9 m; on average, forages higher up than does *M. brachyura*, which often found in same flocks. Hops rapidly through vegetation, often along thin horizontal branches, flashing the

yellow interscapular patch, perch-gleaning prey from leaf surfaces, less often from twigs and vines, with quick bill-stabbing motions and lunges; also makes short sallies and hover-gleans. Occasionally works the same dense vine tangles in interior canopy as are favoured by *M. brachyura*. Appears to be the ecological counterpart of *M. ambigua*.

**Breeding.** Little known. In Bolivia (Pando), pair observed feeding two recently fledged young on 18 Jun, and other family groups of 3-4 birds reported in Jun-Aug. Territory apparently much larger than that of *M. brachyura*, possibly encompassing range of the flocks which it habitually follows.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Fairly common throughout its rather extensive range, which includes several large protected areas. Examples of these are Tambopata-Candamo Reserved Zone, in Peru, Madidi and Noel Kempff Mercado National Parks, in Bolivia, and Serra do Divisor, Pacaás Novos and Tapajós National Parks and Cristalino State Park, in Brazil. In addition, extensive intact habitat remains which, although not formally protected, appears to be at little near-term risk of development.

**Bibliography.** Alverson *et al.* (2000), Cory & Hellmayr (1924), Foster *et al.* (1994), Hackett & Rosenberg (1990), Isler, M.L. *et al.* (1999), Isler, P.R. & Whitney (2002), Munn (1984, 1985), O'Neill (1969), Oren & Parker (1997), Parker (1982, 2003a), Parker & Bailey (1991), Parker & Remsen (1987), Parker *et al.* (1991), Remsen (1986), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Rosenberg (2003), Servat (1996), Sick (1993), Stotz (1990b), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh *et al.* (1990), Zimmer, J.T. (1932a), Zimmer, K.J. (2003a), Zimmer, K.J., Parker *et al.* (1997).

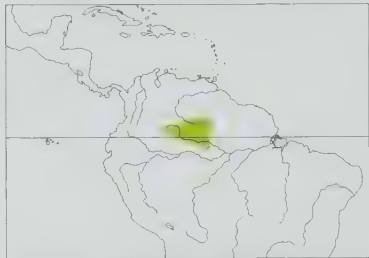
71. Yellow-throated Antwren  
*Myrmotherula ambigua*

French: Myrmidon à gorge jaune Spanish: Hormiguerito Gorgiamarillo  
German: Gelbkehl-Ameisenschlupfer

**Taxonomy.** *Myrmotherula ambigua* J. T. Zimmer, 1932, Mount Duida, 500 feet [c. 150 m], Amazonas, Venezuela.

Forms a superspecies with *M. sclateri*. Genetic and morphological analyses indicate that both are part of a monophyletic group that also includes *M. brachyura*, *M. ignota*, *M. surinamensis*, *M. multistriata*, *M. pacifica*, *M. cherriei*, *M. klagesi* and *M. longicauda* (the "streaked antwren assemblage"). Monotypic.

**Distribution.** SW Venezuela (S Amazonas), extreme E Colombia (Guainía, Vaupés) and NW Brazil (upper R Negro region E to NC Roraima and S to Jaú).



**Descriptive notes.** 8-8.5 cm; 7-8 g. Male is black above, streaked white, light yellow interscapular patch, rump greyish, two prominent white wingbars, tail feathers edged white, narrowly tipped white; cheeks whitish, underparts light yellow, black malar streak, some black streaks on sides. Distinguished from very similar *M. sclateri* by having crown and nape streaks white, rump grey, malar streak less prominent. Female is similar to male, but pale colours on head and breast tawny-buff to buff, interscapular patch minimal or absent. VOICE. Loudsong an evenly paced and evenly pitched series like that of *M. sclateri*, but notes much

shorter and downslurred, overall pace much faster (e.g. 8 notes, 4-4 seconds).

**Habitat.** Canopy and subcanopy of lowland evergreen forest, mostly below 350 m; occasionally to c. 1100 m on sides of tepuis. Found in variety of forest types that occur on white-sand soils, and which have been referred to collectively as "Amazonian *caatinga*"; these include lower-stature, less floristically diverse forest on purer sandy soils, as well as high-canopied (35 m or more), more diverse forest on mixed soils.

**Food and Feeding.** Not well known. Feeds on various small insects; probably also on spiders and other arthropods. Usually encountered as closely associated pair-members, and almost always associated with mixed-species canopy flocks of furnariids, tyrant-flycatchers (Tyrannidae), tanagers (Thraupidae) and other insectivores. Often in same flocks as *M. brachyura*. Roams the highest parts of the canopy, hopping rapidly through smaller branches and terminal foliage, where it perch-gleans prey from leaf (primarily), branch and vine surfaces with darting stabs, and hover-gleans. Also works vine tangles and smaller epiphytes in interior of canopy, occasionally descending to mid-storey along clusters of hanging vines adjacent to trunks. In stunted white-sand forest, regularly feeds as low as 10-15 m, these heights still constituting the canopy and subcanopy. Appears to be the ecological counterpart of *M. sclateri*.

**Breeding.** Nothing known.  
**Movements.** Presumed resident.

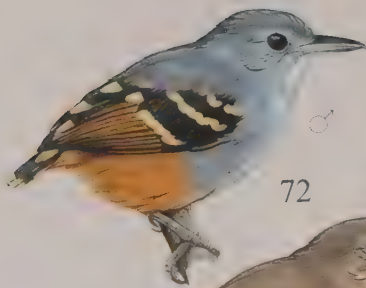
**Status and Conservation.** Not globally threatened. Restricted-range species: present in Orinoco-Negro White-sand Forests EBA. Uncommon to fairly common. Its relatively small range does include some large protected areas, e.g. La Neblina National Park and possibly the Alto Orinoco-Casiquiare Biosphere Reserve, in Venezuela, and Pico da Neblina and Jaú National Parks, in Brazil; also vast contiguous areas of intact habitat which are not formally protected, but are under little or no current threat. Regardless of decrees, even areas that are "officially" protected in this region are affected to varying degrees by illegal mining operations; on the broad scale, however, the impact is relatively minimal, and the region in which this species occurs remains one of those that has been least affected by humans in South America.

**Bibliography.** Borges *et al.* (2001), Cohn-Haft (2003b), Hackett & Rosenberg (1990), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Ridgely & Tudor (1994), Sick (1993), Stotz (1990b), Stotz *et al.* (1996), Willard *et al.* (1991), Zimmer, J.T. (1932a), Zimmer, K.J. (2003a).





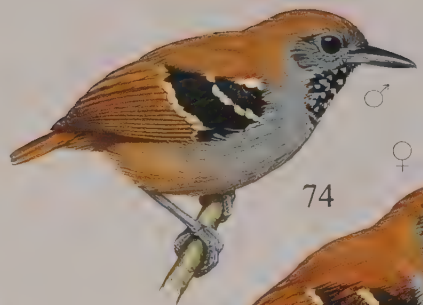




72



73



74



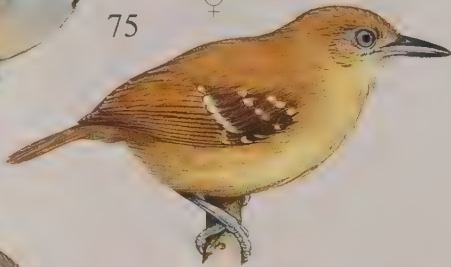
75



76



77



78



*ssp leucophthalma*



*ssp phaeonota*



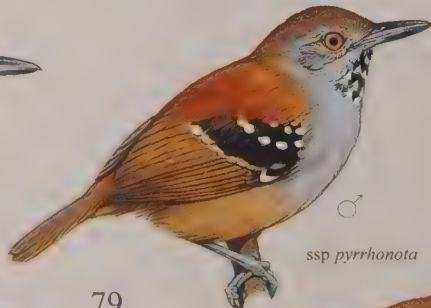
*ssp sororia*



*ssp spodionota*



*ssp haematonota*



*ssp pyrrhonota*



80



79



PLATE 51

inches 2  
cm 5





## 72. Rufous-bellied Antwren

### *Myrmotherula guttata*

French: Myrmidon moucheté

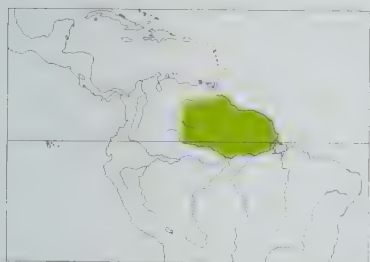
Spanish: Hormiguerito Ventrirrufo

German: Rostbauch-Ameisenschlüpfer

**Taxonomy.** *Myrmothera guttata* Vieillot, 1825, Cayenne.

Forms a superspecies with *M. huxwelli*, but their relationship to other groups in the genus is uncertain. Monotypic.

**Distribution.** S Venezuela (Bolívar, Amazonas), the Guianas and NE Amazonian Brazil (from E of R Negro E to Amapá).



**Descriptive notes.** 8.5-9.5 cm; 8.5-11 g. Tail short, making body appear disproportionately large. Male is mostly grey, with throat paler, interscapular patch white, pale cinnamon spots on uppertail-coverts; wings and tail blackish-brown, remiges edged cinnamon, pale cinnamon tips of wing-coverts, spots on tertials, tip of tail; lower belly, flanks and crissum tawny. Differs from *M. huxwelli* in tawny lower underparts, cinnamon (not white) spots and edgings above. Female is like male, except upperparts olive-grey, anterior underparts greyish-olive. **VOICE.** Loudsong a long, countable series (e.g. 17 notes, 9 seconds) of whistles that gains in intensity and rises slightly in pitch while notes become shorter and more downslurred. Other vocalizations include short (e.g. 0-1 seconds), ascending rattle-like call repeated irregularly or rapidly in series, and short (e.g. 0-4 seconds), slightly downpitched rattle.

**Habitat.** Understorey of lowland evergreen forest, to 600 m, occasionally higher. Primarily in *terra firme* forest, especially in zones having a high density of slender vertical stems and saplings and a well-developed leaf litter. Often in proximity of sluggish streams or poorly drained low spots in forest. Apart from its liking for wet areas, seems to be the ecological counterpart of *M. huxwelli*.

**Food and Feeding.** Little published. Stomach contents of specimens from Surinam included a variety of lepidopteran larvae, orthopterans (Tettigoniidae), hymenopterans (Formicidae), true bugs (Hemiptera: Homoptera: Jassidae), and spiders. Forages in pairs or individually, mostly within 1 m of ground, rarely to 2 m, clinging laterally to slender vertical stems; tends to hitch vertically up these, with little investigation of lateral branches, before flitting to another stem. During foraging, lowers the tail slowly and flicks it up to line of body; displays white interscapular patch in aggressive posture. Gleans prey from leaf, stem and branch surfaces by lunging stabs or reaches; also frequently by short, upward-directed, fluttering sallies to undersides of leaves, and by darting sally-pounces to snatch prey from surface of leaf litter. Sometimes probes curled dead leaves suspended above ground, but just as frequently ignores them. Usually encountered apart from mixed-species flocks, but often joins these as they pass through, dropping out as the flock moves beyond its territory. Documented as occasionally following army ants (in Brazil, Guyana, Surinam), sometimes for up to 2 hours, searching widely rather than waiting intently.

**Breeding.** In French Guiana, two nests in Sept (details previously unpublished) and other families seen in Sept-Dec; in Surinam, fledgling just out of nest in Oct and another accompanied by parents in Aug. In French Guiana, nest a fairly deep cup, built 33-45 cm above ground, in one case located just under large leaf of young palm (*Astrocaryum sciophilum*); 2 eggs, white with violaceous-brown lines. **Movements.** Presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common. Species' range includes some large protected areas, e.g. Canaima, La Neblina and Jaua-Sarisaríama National Parks and the Alto Orinoco-Casiquiare Biosphere Reserve, in Venezuela, and Brownsberg Nature Park and Raleigh Falls-Voltzberg National Park, in Surinam; also encompasses vast contiguous areas of intact habitat which, although not formally protected, are under little or no current threat of development.

**Bibliography.** Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Hackett & Rosenberg (1990), Haverschmidt & Mees (1994), Hilty (2003a), Isler & Whitney (2002), Mason (1996), Meyer de Schauensee & Phelps (1978), Moskovits *et al.* (1985), Novaes (1980), Oniki & Willis (1972), Powell (1989), Reynaud (1998), Ridgely & Tudor (1994), Sick (1993), Snyder (1966), Stotz (1990b), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Stouffer & Bierregaard (1995), Thiollay (1988a, 1994), Tostain (2003), Tostain *et al.* (1992), Willard *et al.* (1991), Willis (1977, 1984a), Zimmer (2003a).

## 73. Plain-throated Antwren

### *Myrmotherula huxwelli*

French: Myrmidon de Hauxwell

Spanish: Hormiguerito de Hauxwell

German: Graubauch-Ameisenschlüpfer

**Taxonomy.** *Formicivora huxwelli* P. L. Slater, 1857, Chamicuro, Loreto, Peru.

Forms a superspecies with *M. guttata*, but their relationship to other groups in the genus is uncertain. Described race *clarior* (C. Brazil) appears to intergrade clinally with nominate and is merged with it, pending further study. Three subspecies recognized.

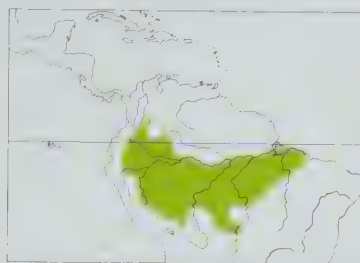
**Subspecies and Distribution.**

*M. h. suffusa* J. T. Zimmer, 1932 - SE Colombia (from Meta S along base of Andes, E to E Vaupés), extreme NW Amazonian Brazil (W of R Japurá), E Ecuador and NE Peru (Loreto and Amazonas N of R Marañón).

*M. h. huxwelli* (P. L. Slater, 1857) - E Peru (S of R Amazon and R Marañón), SW & SC Amazonian Brazil (E to R Xingu in Pará, S to Acre and SW & N Mato Grosso) and NW & NE Bolivia (Pando, Beni, La Paz, NE Santa Cruz).

*M. h. hellmayri* Sneathley, 1906 - E of R Xingu in E Pará and W Maranhão.

**Descriptive notes.** 8.5-9.5 cm; 9-12 g. Tail short, making body appear disproportionately large. Male is mostly grey, paler below, throat whitish; white interscapular patch, white spots on uppertail-coverts; wings and tail blackish-brown, remiges edged white, small white spots on tertials, white tips of wing-coverts, tail tipped white. Distinguished from *M. guttata* by grey posterior underparts, white (not cinnamon) spots and edgings above, spots smaller. Female has upperparts washed cin-



namon-rufous, remiges edged dull cinnamon, underparts tawny-cinnamon except throat paler, sides and flanks tinged olive. Juvenile resembles female but more olive throughout, contrasting pale throat. Race *suffusa* male has spots smaller than nominate, female darker; *hellmayri* lacks interscapular patch, male is paler, female is darker, especially on underparts, with more sharply contrasting whitish throat. **VOICE.** Loudsong a long, countable series (e.g. 20 notes, 8-4 seconds; duration highly variable) in which initial notes sound more musical and higher-pitched, remaining notes become shorter and more hollow-sounding, irregularly, often doubled; also short (e.g. 0-1 seconds), descending rattle-like call, and a rattle similar to that of *M. guttata*.

first speeding up and then becoming evenly paced. Other vocalizations include abrupt "jit" given irregularly, often doubled; also short (e.g. 0-1 seconds), descending rattle-like call, and a rattle similar to that of *M. guttata*.

**Habitat.** Understorey of lowland evergreen forest (*terra firme*, *várzea*/igapó, transitional), mostly below 600 m, rarely to 900 m. More common in *terra firme* forest, particularly where undergrowth is well shaded and there is a moderate density of slender vertical stems and saplings (particularly small palms), fallen branches, and well-developed leaf litter. In many respects the ecological counterpart of *M. guttata*, but present species appears not to have an affinity for streams or swampy ground. Race *hellmayri* occurs in second growth, as well as primary forest.

**Food and Feeding.** Feeds on insects and other arthropods; also, perhaps opportunistically, on small lizards. Analysis of stomach contents of nine Peruvian specimens showed orthopterans to be commonest prey, followed in order by beetles (Coleoptera), spiders, ants (Formicidae), larvae (probably primarily lepidopteran), heteropterans, flies/wasps, and cockroaches (Blattidae). In one prey-selectivity experiment, using birds in outdoor cages, harvestmen (Opiliones) were rejected, but butterflies (Lepidoptera) and dragonflies (Odonata) readily captured and consumed; one bird also captured a 5-cm lizard, which it beat on a branch and then swallowed whole. Forages in pairs or individually, mostly within 1 m of ground, rarely to 3 m up; in 84 observations in Peru (Cocha Cashu), mean foraging height was 0-3 m. Clings laterally to slender vertical stems, tending to hitch vertically up these, with little investigation of lateral branches, before flitting to another stem; also sometimes hitches short distances up philodendrons (*Philodendron*) and other large-leaved vines clinging to base of larger-trunked trees. During foraging, tail is lowered slowly and flicked up to line of body or higher. Gleans prey from leaf, stem and branch surfaces by lunging stabs or reaches (mostly upwards), with neck extended while clinging with feet; also frequently by short, upward-directed fluttering sallies to undersides of leaves. Also makes darting sally-pounces to snatch prey from surface of leaf litter, and frequently hops on ground and picks through litter for several seconds at a time before hopping back up to a vertical perch. Commonly probes curled dead leaves suspended above ground, but just as frequently ignores them; in a study in Peru/Bolivia, dead leaves comprised 50% of foraging substrates out of 70 observations. Usually encountered apart from mixed-species flocks, but often joins these as they pass through its territory, dropping out as the flock moves beyond; participation in mixed flocks may be more common in race *hellmayri*. In some areas regularly follows army ants (*Eciton rapax*, *E. burchelli*, *Labidus praedator*), usually remaining at periphery of swarm if it is attended by obligate followers such as *Phlegopsis* or *Rhegmatorhina* species; takes low perches (mostly below 0-5 m) over the ants, usually clinging laterally to slender vertical saplings or stems, sometimes to root buttresses, and perch-gleans by reaching, or makes short darting sallies to ground, stems, vines and foliage. Ant-following recorded from Ecuador, Peru and Brazil, and perhaps most common in race *hellmayri*; in the Alta Floresta region of Mato Grosso (Brazil), where nominate race is common, ant-following was not noted despite many hours of observation at numerous ant swarms.

**Breeding.** Nests recorded in Nov-Feb in Brazil, but young fledglings seen in Apr-Aug in E (Belém); single nest in Oct in Ecuador. One nest in Brazil a cup 5-5 cm in external diameter and 4 cm deep, made exclusively of blackish, horsehair-like rootlets, sturdy yet loosely woven (contents visible from below), suspended from fork between two fine branches, another was 80-90 cm above ground at end of branch in small tree; Ecuador nest a small, thin cup, suspended between two upright twigs 20 cm above ground. Normal clutch probably 2 eggs, light pinkish with irregularly distributed brownish or vinaceous spots and streaks; incubation confirmed only for female, but probably by both parents.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout its large range. This includes a number of large protected areas, such as Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, Serra do Divisor, Picaás Novos and Tapajós National Parks, Cristalino State Park and Caxiuanã National Forest, in Brazil, and Madidi and Noel Kempff Mercado National Parks, in Bolivia. In addition, the species' range encompasses vast contiguous areas of intact habitat which, although not formally protected, are under little or no current threat of development.

**Bibliography.** Álvarez (1994), Alverson *et al.* (2000), Bates *et al.* (1999), Cory & Hellmayr (1924), Foster *et al.* (1994), Hackett & Rosenberg (1990), Hilty & Brown (1986), Isler & Whitney (2002), Munn (1984, 1985), Munn & Terborgh (1979), Novaes (1969, 1970, 1973), Oniki (1971b, 1972a), Oren & Parker (1997), Parker (2003a), Parker & Bailey (1991), Parker *et al.* (1982), Pearson (1977a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rosenberg, K.V. (1990a, 1993, 1997), Schönwetter & Meise (1967), Servat (1996), Sick (1993), Stotz (1990b), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Valente (2000), Willis (1984a), Zimmer, J.T. (1932a), Zimmer, K.J. (2003a), Zimmer, K.J., Parker *et al.* (1997).

## 74. Star-throated Antwren

### *Myrmotherula gularis*

French: Myrmidon à gorge étoilée

German: Perlenkehl-Ameisenschlüpfer

Spanish: Hormiguerito Gorgipinto

**Taxonomy.** *Thamnophilus gularis* Spix, 1825, no locality = Rio de Janeiro, Brazil.

Relationships uncertain; often placed with the *M. haematonta* group (the "stipple-throated antwren assemblage") because of its dotted throat, but that placement is put in question by the finding of a



cup rather than globular nest; also, its behaviour suggests that it may be related to *M. gutturalis* and *M. hauxwelli*; its vocalizations appear to be intermediate. Monotypic.

**Distribution.** SE Brazil in coastal region from S Bahia S to Santa Catarina and N Rio Grande do Sul, extending inland in S to W Paraná.

**Descriptive notes.** 8.5-9.5 cm; 10-12 g. Male has forehead greyish, crown, upperparts, remiges and tail rufous-brown; hidden white interscapular patch; wing-coverts blackish-brown, greater and median coverts dotted pale cinnamon, bend of wing edged white; throat black, spotted white, breast and belly grey, flanks and crissum pale rufous-brown. Female differs from male in having forehead buffy, white throat spots larger, no interscapular patch. **VOICE.** Loudsong a short (e.g. 8 notes, 2-4 seconds), evenly paced, countable series of harsh downslurred notes, intensity increasing initially, pitch decreasing terminally.

Other vocalizations include brief, harsh notes; a short, flat rattle-like call (individual elements not distinct), sometimes in series of 3-4; and a short (e.g. 0.5 seconds) rattle (individual notes distinct).

**Habitat.** Understorey of evergreen forest, to 1550 m; in most areas found above 300 m, but occurs down to near sea-level at base of the Serra do Mar. Favours dense vegetation and tangles, especially along sluggish forest streams (lowlands) and shaded ravines (mountainsides).

**Food and Feeding.** Little published. Feeds on a variety of small insects, including crickets (Gryllidae), grasshoppers (Acrididae), hemipterans, and lepidopteran larvae; also spiders. Forages in pairs or individually, mostly 0-5 m above ground, rarely to 8 m, moving actively but not usually hurriedly, and routinely flicking both wings. In intraspecific displays, males face each other c. 15 cm apart, with wings played to show white spots. Most commonly forages within a few centimetres of ground, clinging laterally to slender vertical stems, ferns, palmettos and saplings, alternating between upward-reaching perch-gleans and short jumping sallies to undersides of leaves; also sally-pounces to snatch prey from surface of leaf litter, and hops on fallen logs and surface debris. In addition, regularly works through fallen branches and through shaded understorey trees, where it scans both live and dead leaves; often (but not habitually) pauses to probe the latter, typically for 1-4 seconds, occasionally longer. When foraging more than 1 m above ground, most often hitches up through vine tangles or along central portions of trees, avoiding terminal branches, and often probing in tufts of moss on trunks and larger branches. Also gleans from bare-stem, branch and vine surfaces. Generally alone, but sometimes in company of mixed-species understorey flocks at lowland elevations, where often with Red-crowned Ant-tanagers (*Habia rubica*), foliage-gleaners (Furnariidae) and other thamnophilids. One published record of a pair following army ants (*Labidus praedator*) for 1 hour through dense growth near a treefall.

**Breeding.** Three previously unpublished nests, found in Nov in São Paulo, Paraná and Santa Catarina, were located 0.6-1.0 m off the ground in shrubs hanging over or adjacent to watercourses that flowed through tall (c. 20 m high) forest. Nests were cup-shaped, and built amongst several thin branches or placed in a branch fork; nests were c. 7 cm in diameter (one widening to 9.5 in one direction) and 6.0-8.0 cm high, constructed of roots and *Marasmium* fungal strands; no dead leaves were hung from nests but fresh green moss placed around one. Both parents carried food to the nest. Eggs have been described as white, with very fine, barely needle-stitch-sized brown spots that condense into a wreath on blunt end.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Atlantic Forest Lowlands EBA. Generally uncommon. No recent records from W Paraná and N Rio Grande do Sul, where recorded historically. Although not currently threatened, its populations should be monitored for signs of decline. Less than 20% of original forest in the region remains; although this species occurs in a number of well-protected parks and reserves, e.g. Itatiaia, Serra dos Órgãos and Serra da Bocaina National Parks, and Serra do Mar and Desengano State Parks, other reserves lack the manpower and infrastructure for adequate protection. The enforced protection of all existing parks and reserves should ensure the continued viability of this species. Even so, the deforestation, colonization, agricultural expansion and urbanization that inevitably follow an expanding human population in this already most densely populated region of Brazil will present continuing threats to the integrity of the reserves on which this and many other endemic species depend.

**Bibliography.** Aleixo (1999), Buzzetti (2003b), Cory & Hellmayr (1924), Davis (1945, 1946), Hackett & Rosenberg (1990), Hölbling & Lencioni (1992), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Lopes *et al.* (1980), Marini *et al.* (1996), Nehrkorn (1914), Oniki (1981), Pacheco *et al.* (2003), Parker (2003a), Ridgely & Tudor (1994), do Rosario (1996), Schönwetter & Meise (1967), Scott & Brooke (1985), Sick (1993), Stotz *et al.* (1996), Whitney (1994a), Willis (1984a), Zimmer (2003a).

## 75. Brown-bellied Antwren

### *Myrmotherula gutturalis*

**French:** Myrmidon à ventre brun

**Spanish:** Hormiguerito Ventripardo

**German:** Braunbauch-Ameisenschlüpfer

**Taxonomy.** *Myrmotherula gutturalis* P. L. Selater and Salvin, 1881, Bartica, Guyana.

Genetic, morphological and behavioural analyses indicate that this species is part of a monophyletic group that also includes *M. fulviventr*, *M. leucophthalma*, *M. spodiota*, *M. haematona*, *M. feldsaai*, *M. ornata* and *M. erythrura* (the "stipple-throated antwren assemblage"), and which may not be closely related to other species placed in the genus. Monotypic.

**Distribution.** E Venezuela (Bolívar E of R Caroni), the Guianas and NE Amazonian Brazil (E of R Branco and lower R Negro).

**Descriptive notes.** 9.5-10.5 cm; 7.5-9.5 g. Male is olive-brown above, wing-coverts darker with small white (sometimes pink-tinged) tips; throat black, spotted white; head side, breast and upper belly grey, posterior underparts become grey with clay-coloured tinge. Female has crown and upperparts yellowish olive-brown, remiges and tail reddish, wing-coverts tips tinged pink or pinkish-buff,

throat pale buff, underparts pale brownish-buff, darker on flanks and crissum. Juvenile male has shorter tail than adult, large wing spots almost forming a band. **VOICE.** Loudsong a very rapid, high-pitched, musical trill of abrupt notes initially ascending sharply in pitch and intensity, then gradually dropping in pitch, length variable (typically 1.5-3 seconds). Calls include distinctive "chip" followed by a series of c. 5 notes that rise and fall in pitch and intensity; also single downslurred note, and rubbery rattle rising and falling in pitch and intensity.

**Habitat.** Understorey of lowland and foothill evergreen forest (*terra firme*), to 1000 m, mostly below 600 m.

**Food and Feeding.** Little published. Feeds on variety of insects and arachnids; stomach contents of Surinam specimens included beetles (Coleoptera), hemipterans, homopterans, orthopterans (Acrididae), and false scorpions (Pseudoscorpionidae). Closely associated pair-members or individuals forage mostly 2-9 m above ground, occasionally to 15 m, obtaining food almost exclusively from recesses of curled, arboreal dead leaves; in 110 observations of foraging at a site near Manaus (Brazil), mean foraging height was 4.2 m and 98% of substrates were arboreal dead leaves. Almost always with mixed-species understorey flocks of *Thamnomanes* antshrikes, other antwrens, foliage-gleaners (Furnariidae) and other insectivores. In intraspecific displays, two or more males face each other less than 1 m apart, fluff the back feathers, flare out throat feathers, and pivot from side to side while vocalizing incessantly. Forages mostly along slender branches of understorey trees, on understorey palms, and in vine tangles; progresses rapidly by short hops, often hitching from side to side, ignoring intervening live foliage and systematically pausing to inspect arboreal dead leaves, both single hanging ones and clusters trapped in vines, branches and, especially, the tops of small palms. Gleans prey from smaller dead leaves mostly by reaching up with neck and legs extended, or by hanging head downwards from adjacent perches; from larger leaves (especially dead palm fronds) by hanging acrobatically like a tit (Paridae) from the margins (often upside-down) or bottom of the leaf itself, or by perching atop it; usually spends 5-15 seconds, but sometimes up to 1 minute or more, in rummaging audibly in a single leaf or cluster, and probing by delicately inserting the bill and sometimes the entire head into curls and crevices. Often works systematically along the rachis of dead palm fronds, leaning over to probe into each of the many curled blades; also inspects frayed and dying ends of mostly live fronds. When larger prey items are extracted, usually hops or flies to a nearby horizontal perch and bashes the captured arthropod forcefully against the branch, sometimes for up to a minute, until the prey is subdued. Protracted searches of individual leaves or clusters of leaves, combined with lengthy manipulating time for large prey items, mean that these birds are often left behind after more active flockmates have moved some distance on; in one study, foraging rates of this species were 12 moves per minute, significantly lower than those of three other *Myrmotherula* species that glean from live leaves (18.3-18.9).

**Breeding.** Not well known. Nests in French Guiana in Feb-Mar, Jun and Aug-Dec; in Brazil (near Manaus), nest found in May and young juvenile in Apr. Brazil nest was domed or oven-shaped, composed of leaves and twigs, irregular and untidy in appearance, situated 0.4 m up in bush inside *terra firme* forest; one in French Guiana described as a deep (15 cm) pouch with roof, laterally opened at top, composed externally of many dead leaves, herbs and fungal (*Marasmius*) fibres, internal cup 4.6 cm, attached to branch of small understorey tree and fern 1.5 m above ground, while another was at height of 1.4 m. Clutch 2 eggs, white, with light brown or violaceous spots forming conspicuous wreath at larger end; both sexes incubate, brood, and feed young during day; nestling period 11 days.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout its range. The region occupied by this species contains a number of protected areas, examples of which are Imataca Forest Reserve and El Dorado, and Canaima National Park, in Venezuela, Brownsberg Nature Park and Raleigh Falls-Voltzberg National Park, in Surinam, and Ducke Reserve and the various BDFPP INPA forests N of Manaus, in Brazil; also large contiguous expanses of intact habitat which, although not formally protected, are at little current risk of development. Wholesale logging and mining operations, along with human colonization and deforestation for subsistence agriculture, remain the primary long-term threats to this and other lowland-forest species of the Guianan region.

**Bibliography.** Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Dick *et al.* (1984), Hackett & Rosenberg (1990), Haverschmidt & Mees (1994), Hilty (2003a), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Mason (1996), Meyer de Schauensee & Phelps (1978), Novas (1980), Oniki (1979c), Oniki & Willis (1982), Powell (1989), Reynaud (1988), Ridgely & Tudor (1994), Schönwetter & Meise (1988), Sick (1993), Snyder (1966), Stotz (1990b), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Thiollay (1988a, 1994), Tostain (2003), Tostain *et al.* (1992), Wiley (1980), Wilkinson & Smith (1997), Willis (1977, 1991), Zimmer (2003a).

## 76. Checker-throated Antwren

### *Myrmotherula fulviventr*

**French:** Myrmidon fauve

**Spanish:** Hormiguerito Leonado

**German:** Tropfenkehl-Ameisenschlüpfer

**Other common names:** Fulvous(-bellied) Antwren

**Taxonomy.** *Myrmotherula* [sic] *fulviventr* Lawrence, 1862, Lion Hill, Canal Zone, Panama.

Genetic, morphological and behavioural analyses indicate that this species is part of a monophyletic group that also includes *M. gutturalis*, *M. leucophthalma*, *M. spodiota*, *M. haematona*, *M. feldsaai*, *M. ornata* and *M. erythrura* (the "stipple-throated antwren assemblage"), and which may not be closely related to other species placed in the genus. Although four races have been described, namely, *costaricensis* (S Honduras to W Panama), *fulviventr* (E Panama to W Colombia), *salmoni* (C Colombia) and *viduata* (NW Ecuador), conflicting information surrounds the diagnosability and geographical ranges of these; further study required. Monotypic.

**Distribution.** Caribbean slope from extreme SE Honduras S to W Panama, thence both slopes E from Veraguas, and Colombia (Pacific slope, base of N end of Andes E to Santander, and Magdalena Valley S to Antioquia and Boyacá) and W Ecuador (S to E Oro).

**Descriptive notes.** 10-11 cm; 8.5-11.5 g. Male has grey-brown crown and upperparts, reddish remiges and tail; wing-coverts blackish-brown, more olive-brown in Magdalena Valley in Colombia ("salmon"), but apparently intergrading with other birds in N, coverts with large yellow-ochre tips; ear-coverts grey; throat black with large white spots; breast grey, rest of un-



derparts are mostly brownish-buff, darker posteriorly; iris golden, becoming rich chocolate-brown in older birds. Female differs from male in having side of head and throat brownish-buff. Juvenile has grey iris, becoming pale yellow in first-year plumage. **Voice.** Loudsong a variable series of abrupt, countable, almost staccato notes (e.g. 11 notes, 2-5 seconds), variable in pace, pitch and intensity, but often accelerates and intensifies initially and decelerates and dies off slightly at end; same note delivered much more rapidly in intraspecific agonistic display. Calls include a moderately long sibilant note and a rattle.

**Habitat.** Understorey of lowland and foothill evergreen forest and adjacent tall second-growth woodland; mostly below 1100 m, locally to 2000 m in Colombia. Favours, or perhaps requires, areas with abundant vine tangles supporting high density of aerial leaf litter.

**Food and Feeding.** Feeds on various insects, particularly cockroaches (Blattidae), crickets (Gryllidae) and katydids (Tettigoniidae), and spiders. Forages as closely associated pair-members, individuals, or family groups, 0.5-2.5 m above ground; in 126 observations in a study in Panama, mean height was 10.5 m; other fieldwork in Panama/Costa Rica suggests that most foraging is at 1-8 m. Food obtained almost exclusively from recesses of curled, arboreal dead leaves; in Panama study, 98% of its foraging time was spent in searching aerial leaf litter. Usually with mixed-species flocks of insectivores; studies on Barro Colorado I (Panama) indicate that territories are highly stable and typically coincide with those of *Microhousia quixensis*, or often of *M. axillaris*, which then travel in same flocks, and that the species co-defend their territories. In intraspecific displays, males face each other c. 30 cm apart, lower the head, fluff out back plumage, and pivot from side to side, vocalizing incessantly. Forages mostly in vine tangles and along slender branches of understorey trees, or on understorey palms; progresses rapidly by short hops, often hitching from side to side, ignoring intervening live foliage and systematically pausing to inspect single hanging dead leaves and also dead-leaf clusters trapped in vines, in branches and in tops of small palms. At higher elevations, also occasionally inspects leaf litter lodged in small epiphytes, and moss tangles along trunks of trees. Gleans prey from smaller dead leaves mostly by reaching up with neck and legs extended, or by hanging head downwards from adjacent perches; from larger leaves by hanging acrobatically like a tit (Paridae) from the margins (often upside-down) or bottom of the leaf itself, or by perching atop it; spends 5-15 seconds, and sometimes 1 minute or longer, in rummaging audibly in a single leaf or cluster, probing by delicately inserting the bill, sometimes the entire head, into curls and crevices. When larger prey item obtained, usually hops or flies to a nearby horizontal perch and bashes it forcefully against the branch, sometimes for up to a minute, until it is subdued. Owing to lengthy searching of leaves and protracted time spent in handling large prey, this species is often left behind after more active flockmates have moved on. Occasionally visits army-ant swarms for short periods, rarely sallying to ground or air to catch escaping insects.

**Breeding.** Mar-Aug in Costa Rica; in Panama, nests found in all months except Dec and Apr but concentrated in rainy season, and newly fledged young recorded on Barro Colorado I in Nov-Mar; a nest in Dec in Colombia. Nest a deep (15 cm), pensile pouch with oblique opening at top, composed of fine blackish-brown fungal filaments and rootlets, supporting thick layer of dead leaves, lined with fine fibres, c. 0.4-2 m (occasionally to 8 m) above ground in terminal fork of thin, drooping twig of understorey sapling, shrub or vine tangle; multiple nests often built by same pair. Normal clutch 2 eggs, white or cream-coloured, with reddish-brown, purplish-chestnut and pale lilac blotches, fine spots and scrawls mostly concentrated in wreath around larger end; incubation by both parents, only by female at night, period 18-20 days; juveniles in Panama continued to follow parents closely in mixed-species flocks, occasionally begging, for at least 4-6 months after fledging; courtship and nest-building commenced after young from previous year had dispersed. Of 26 and 51 nests in Panama in two successive years, success was 30.8% and 27.5%, respectively.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout its range. This includes a number of protected areas, e.g. Braulio Carrillo National Park and La Selva Biological Reserve, in Costa Rica, Soberania and Darién National Parks and Comarca Kuna Yala Indigenous Reserve, in Panama, Los Katios National Park, in Colombia, and Río Palenque Science Centre and the Manglares-Churute Ecological Reserve, in Ecuador. Continued protection of the forests in these and other existing reserves should ensure the maintenance of viable populations of this species.

**Bibliography.** Blake & Loiseleur (2001), Carriker (1910), Cody (2000), Cory & Hellmayr (1924), Eisenmann (1952), Gradwohl & Greenberg (1980, 1982a, 1982b, 1984), Greenberg (1984), Greenberg & Gradwohl (1983, 1985, 1986, 1997), Hackett & Rosenberg (1990), Hilty (1997), Hilty & Brown (1986), Isler & Whitney (2002), Jones (1977), Levey (1988), Monroe (1968), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robinson *et al.* (2000), Schemske & Brokaw (1981), Schönwetter & Meise (1967), Skutch (1969c), Slud (1964), Stiles & Skutch (1989), Stotz *et al.* (1996), Wetmore (1972), Wiley (1971), Willis (1972b, 1980, 1984a), Willis & Eisenmann (1979), Zimmer (2003a).

## 77. White-eyed Antwren

### *Myrmotherula leucophthalma*

**French:** Myrmidon aux yeux blancs

**Spanish:** Hormiguero Ojiblanco

**German:** Olivbrauner Ameisenschlüpfer

**Taxonomy.** *Formicivora leucophthalma* Pelzel, 1868, Salto do Girão = Salto do Jirau, Rondônia, Brazil.

Genetic, morphological and behavioural analyses indicate that this species is part of a monophyletic group that also includes *M. gutturalis*, *M. fulviventris*, *M. spodiota*, *M. haematona*, *M. fieldsai*, *M. ornata* and *M. erythrura* (the "stipple-throated antwren assemblage"), and which may not be closely related to other species placed in the genus. With exception of distinctive race *phaeona*, morphological distinctions among races are not clear, and ranges given below are tentative; further study needed. Four subspecies recognized.

**Subspecies and Distribution.**

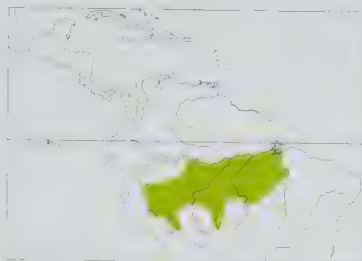
*M. l. leucophthalma* (Pelzel, 1868) - E Peru (E of R Ucayali), W Brazil S of R Amazon (E to lower R Madeira and drainage of R Aripuanã) and NW & NE Bolivia (Pando, NE Santa Cruz).

*M. l. dissita* Bond, 1950 - SE Peru (Puno) and adjacent Bolivia (La Paz).

*M. l. phaeonota* Todd, 1927 - S Amazonian Brazil from lower R Madeira E to lower R Tapajós.

*M. l. sordida* Todd, 1927 - R Tapajós E to R Tocantins.

**Descriptive notes.** 9.5-11 cm; 8-10.5 g. Male nominate race has grey-brown crown and upperparts, reddish remiges and tail; wing-coverts blackish-brown with large cinnamon-tinged white tips; ear-coverts grey-brown; throat black, spotted white; breast and upper belly grey, posterior underparts grey with ochraceous tinge; iris pale, sometimes brown (probably age-related). Female differs from male in having throat cinnamon, side of head and underparts light olive-brown, centre of breast and upper belly variably tinged cinnamon. Race *sordida* male differs from nominate in having wing-covert tips white, female more cinnamon-tinged below; *dissita* male has wing-covert tips cinnamon, female with least cinnamon tinge below; *phaeona* has upperparts mainly reddish-brown in both sexes. **Voice.** Loudsong a moderately long series (e.g. 15 notes, 4 seconds) of



downslurred notes, first one usually drawn out, subsequent notes shortening as series speeds up and drops slightly in pitch, somewhat variable; in intraspecific agonistic display more complex, raspy notes, again often introduced by longer flatter note, with pace, length of series, etc. quite variable. Calls include abrupt downslurred notes, sometimes in doublets and triplets, or given in regularly paced series; also a rubbery rattle.

**Habitat.** Understorey of lowland evergreen forest (*terra firme*, transitional), to 700 m, rarely to 1050 m. Most common in forest with dense understorey and great abundance of ar-

boreal dead leaves, both hanging and trapped in vine tangles and understorey palms. Micro-habitat associations complex and geographically variable, possibly dependent on presence or absence of congeneric dead-leaf specialists. In Pando (Bolivia), restricted to streamside bamboo thickets and disturbed forest, and replaced in upland forest by *M. haematona*. In Mato Grosso (Brazil), occurs in upland and transitional forest, but usually absent from stands of bamboo, where replaced by *M. ornata*. Regularly occurs together with latter species in bamboo stands in E Peru (Madre de Dios). **Food and Feeding.** Feeds on insects and spiders; analysis of stomach contents of 18 specimens from Peru and Bolivia revealed that commonest prey were katydids (Tettigoniidae), crickets (Gryllidae) and cockroaches (Blattidae), followed by beetles (Coleoptera; virtually all less than 10 mm), spiders, heteropterans, and ants (Formicidae). Forages in pairs in close association, or individually, or in family groups, mostly 1-6 m above ground, occasionally to 15 m or higher, obtaining prey primarily from recesses of curled, arboreal dead leaves; in 89 observations at Cocha Cashu (Peru) mean foraging height was 2.78 m, and at two sites in Peru c. 90% and almost 99%, respectively, of food taken from dead leaves. Almost always with mixed-species understorey flocks of *Thamnomanes* antshrikes, other antwrens, foliage-gleaners (Furnariidae) and other insectivores. In intraspecific displays, males face each other c. 30 cm apart, lower the head, fluff out back plumage, and pivot from side to side, vocalizing constantly. In upland forest, forages mostly along slender branches of understorey trees and on understorey palms (e.g. *Geonoma*); in transitional forest, more often in vine tangles. Progresses rapidly by short hops, often hitching from side to side, ignoring intervening live foliage, and systematically pausing to inspect arboreal dead leaves, both individual hanging ones and clusters of dead leaves trapped in vines, branches and, especially, tops of small palms; in one study in Peru, medium-sized (10-15 cm) leaves used most often. Gleans prey from smaller dead leaves mostly by reaching up, with neck and legs extended, or by hanging head down from adjacent perches; from larger leaves (especially dead palm fronds) by hanging acrobatically like a tit (Paridae) from sides (often upside-down) or bottom of the leaf, or by perching atop it; usually spends 4-30 seconds (sometimes up to 1 minute or longer) in rummaging audibly in a single leaf or cluster, delicately inserting the bill and sometimes the entire head into curls and crevices. Also inspects frayed and dying ends of mostly live palm fronds. When larger item extracted, usually hops or flies to a nearby horizontal perch and bashes it forcefully against the branch, sometimes for up to a minute, until prey is subdued. Because of protracted searches of individual leaves or clusters, combined with prolonged time spent in handling large prey, is often left behind after more active flockmates have moved away some distance. Studies in Peru and observations in Brazil showed that, where this species occurs together with *M. ornata*, it forages lower, investigates larger leaves and specializes on palms, whereas *M. ornata* forages higher, investigating smaller leaves, and specializes on bamboo; evidence indicates that, in addition to responses to resource availability, species-specific foraging niches in this guild are influenced by co-occurring species.

**Breeding.** Almost nothing known. Nest-building reported from Peru (Cocha Cashu, in Madre de Dios) 15th-20th Oct.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout its rather large range. Within this are several sizeable protected areas, such as Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, Madidi and Noel Kempff Mercado National Parks, in Bolivia, and Pacaás Novos and Tapajós National Parks, Cristalino State Park and Caxiuanã National Forest, in Brazil. In addition, its range contains vast contiguous areas of intact habitat which, despite being currently unprotected, remain at low risk of near-term development.

**Bibliography.** Alverson *et al.* (2000), Cory & Hellmayr (1924), Foster *et al.* (1994), Hackett & Rosenberg (1990), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Killean & Schulenberg (1998), Munn (1984, 1985), Munn & Terborgh (1979), Oren & Parker (1997), Parker (2003a), Parker & Bailey (1991), Parker & Remsen (1987), Remsen & Parker (1984), Ridgely & Tudor (1994), Rosenberg, K.V. (1990a, 1993, 1997, 2003), Servat (1996), Sick (1993), Stotz (1990b), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh *et al.* (1990), Valente (2000), Zimmer (2003a), Zimmer, Parker *et al.* (1997).

## 78. Foothill Antwren

### *Myrmotherula spodiota*

**French:** Myrmidon des contreforts

**Spanish:** Hormiguero Submontano

**German:** Westlicher Graubrust-Ameisenschlüpfer

**Other common names:** Ecuadorian Antwren

**Taxonomy.** *Myrmotherula spodiota* P. L. Sclater and Salvin, 1880, Sarayacu, Pastaza, Ecuador. Forms a superspecies with *M. haematona*, which formerly considered conspecific, and with *M. fieldsai*. Genetic, morphological and behavioural analyses indicate that all three are part of a monophyletic group that also includes *M. gutturalis*, *M. fulviventris*, *M. leucophthalma*, *M. ornata* and *M. erythrura* (the "stipple-throated antwren assemblage"), and which may not be closely related to other species placed in the genus. Two subspecies recognized.

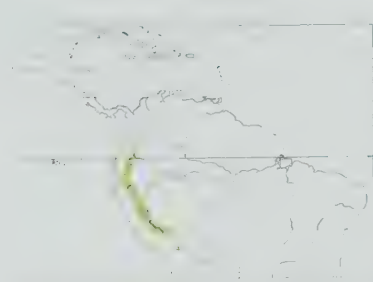
**Subspecies and Distribution.**

*M. s. spodiota* P. L. Sclater & Salvin, 1880 - E Andean slope from S Colombia (Cauca, Caquetá) S to N Peru (Amazonas N of R Marañón).

*M. s. sororia* Berlepsch & Stolzmann, 1894 - E slope in Peru S of R Marañón (San Martín S to Madre de Dios).

**Descriptive notes.** 10.5-11 cm; 9-10.5 g. Male has crown and upperparts dark grey, tinged brown, rump dark reddish yellow-brown; wing-coverts blackish-brown, greater coverts tipped pale buff, median and lesser coverts tipped white; flight-feathers and tail dark brown; throat black, spotted white; head side, breast and upper belly grey, lower belly, flanks and crissum reddish yellow-brown. Female is olive-brown above, rump tinged buff, wings and tail brown with wing-coverts dark brown, pinkish-buff wing-covert tips, yellow-ochre head side, throat and underparts, lower





**Food and Feeding.** Feeds on variety of insects, probably also spiders; in Ecuador, observed to take small cockroaches (Blattidae), lepidopteran larvae, adult moths, and a katydid (Tettigoniidae) more than 5 cm long. Closely associated pairs, individuals or family groups forage 0.5–8 m above ground (activities concentrated at 1–4 m), almost always with mixed-species flocks of insectivores. Forages almost exclusively at isolated dead leaves and dead-leaf clusters hanging or trapped above ground in understorey; also sometimes probes in tufts of moss and in shaggy, dead bark of understorey vines. Hitches rapidly along slender limbs of trees, frequently flicking the wings shallowly, and flicking the tail up or down sharply through an irregular arc, only rarely scanning live leaves, and pausing only to investigate suspended or trapped dead leaves. Probes smaller dead leaves by reaching from nearby perches; gleans from dead-leaf clusters and larger, isolated dead leaves by perching atop them or by hanging acrobatically, often after first shaking the leaf with its bill; spends anything from several seconds to 1 minute (rarely longer) in rummaging audibly in clusters and larger single leaves, inserting the bill into curls and crevices. When larger item extracted, usually hops or flies to a nearby horizontal perch and bashes it hard against branch, sometimes for up to a minute, until prey is subdued. Protracted time devoted to searching individual leaves or clusters, as well as to handling large prey, often causes this species to be left behind after the flock has moved well away.

**Breeding.** Almost nothing known. Family groups, and a food-begging juvenile with adults, recorded in late Mar in E Ecuador.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout its range. Although it occurs only in a narrow elevational belt, this does include some protected areas, e.g. Sumaco-Galeras and Sangay National Parks, in Ecuador. In general, the lower Andean slopes to which this species is restricted are some of the areas most at risk of deforestation and cultivation by an ever-expanding human population; even relatively common species living in this zone should, therefore, be considered worthy of monitoring.

**Bibliography.** Cory & Hellmayr (1924), Hilty & Brown (1986), Krabbe, Isler *et al.* (1999), Parker & Remsen (1987), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Salaman *et al.* (1999), Schulenberg & Awbrey (1997a), Stotz *et al.* (1996), Whitney (1994a), Willis (1984a), Zimmer (1930, 1932a).

## 79. Stipple-throated Antwren

### *Myrmotherula haematonota*

French: Myrmidon cravaté

Spanish: Hormiguerito Dorsirrojo

German: Östlicher Graubrust-Ameisenschlüpfer

**Taxonomy.** *Formicivora haematonota* P. L. Slater, 1857, Chamicuros, Loreto, Peru.

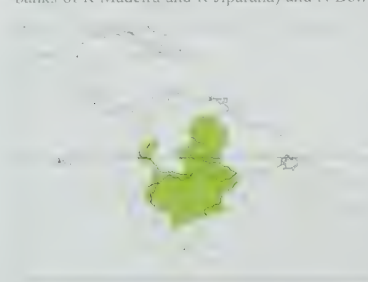
Forms a superspecies with *M. spodionota*, which formerly considered conspecific, and with *M. fieldsaii*. Genetic, morphological and behavioural analyses indicate that they are all part of a monophyletic group that also includes *M. gutturalis*, *M. fulviventris*, *M. leucophthalma*, *M. ornata* and *M. erythrura* (the “stipple-throated antwren assemblage”), and which may not be closely related to other species placed in the genus. Morphological distinctions between nominate race and *amazonica* possibly represent clinal variation, and geographical ranges considered tentative pending further study. Three subspecies recognized.

**Subspecies and Distribution.**

*M. h. pyrrhonota* P. L. Slater & Salvin, 1873 - SE Colombia (near base of Andes S from Meta, and E Vaupés), S Venezuela (Amazonas, Bolívar E to R Caroni drainage), extreme NE Ecuador (Sucumbios), NE Peru (Loreto N of R Napo and R Amazon) and NW Brazil (R Negro drainage and N Roraima).

*M. h. haematonota* (P. L. Slater, 1857) - E Peru S of R Napo and Amazon (Loreto S to Madre de Dios) and W Brazil (extreme SW Amazonas, Acre).

*M. h. amazonica* H. von Ihering, 1905 - SC Amazonian Brazil (both banks of R Jurua E to both banks of R Madeira and R Jiparaná) and N Bolivia (Pando).



**Descriptive notes.** 10.5–11 cm; 9–10 g. Male has crown to upper mantle greyish olive-brown, rest of upperparts, flight-feathers and tail deep rufous; wing-coverts blackish-brown, greater coverts tipped pale buff, median and lesser coverts tipped white; throat black, spotted white; head side, breast and upper belly light grey, lower belly, flanks and crissum yellow-brown. Female differs from male in having wing-covert tips more pinkish-buff, throat white to pale buff and variably streaked black, usually dark feather bases showing through, head side and underparts light yellowish olive-brown, darker on flanks and crissum. Race *pyrrhonota* male is very like nominate but rufous of upperparts perhaps brighter and clearer, female distinctive with head side and throat yellow-ochre, throat usually unstreaked (sometimes few fine streaks) and dark bases not apparent, breast and belly reddish yellow-brown to reddish-tinged buff, flanks and crissum olive-brown; *amazonica* is also similar, perhaps brighter above and paler below, female lighter rufous above, more ochraceous on throat, more greyish-brown on flanks and belly. **Voice.** Loudsong a trill of abrupt, sibilant notes first ascending and then gradually dropping in pitch, similar in pattern to that of *M. gutturalis* and *M. spodionota*, pace and length appear to vary regionally; in intraspecific agonistic display, song of complex and raspy notes, often introduced by up to 4–5 short clear notes. Calls include doublet of abrupt notes, second higher-pitched (recorded only for *pyrrhonota*); also abrupt single note, and high-pitched rattle.

underparts browner, throat with a few thin blackish streaks and dark feather bases giving mottled appearance. Race *sororia* barely differs from nominate, male more olive above, with rump, flanks and crissum less reddish, throat spots may average larger, female underparts paler. **Voice.** Loudsong a trill of abrupt, sibilant notes first ascending sharply and then gradually dropping in pitch, similar in pattern to that of *M. gutturalis*. Calls include short, high-pitched rattle.

**Habitat.** Understorey of foothill and montane evergreen forest, from 500 m (higher in some regions) to 1600 m.

## Family THAMNOPHILIDAE (TYPICAL ANTBRIDS) SPECIES ACCOUNTS

**Habitat.** Understorey of lowland evergreen forest (mostly *terra firme*), mostly below 500 m; to 1300 m in Venezuela and N Brazil (N Roraima). Replaces *M. leucophthalma* in upland forest in N Bolivia, where latter species locally restricted to streamside bamboo thickets and disturbed forest.

**Food and Feeding.** Feeds on insects and spiders. Analysis of stomach contents of 16 specimens from Bolivia revealed that commonest prey were orthopterans, i.e. katydids (Tettigoniidae) and crickets (Gryllidae), which accounted for more than 50% of all prey identified, and cockroaches (Blattidae), followed by spiders, beetles (Coleoptera; virtually all smaller than 10 mm), ants (Formicidae) and heteropterans; this species had the lowest dietary diversity of any of the 16 dead-leaf specialists studied. Closely associated pair-members, individuals, or family groups forage mostly 1–3 m above ground, also at 5–9 m in some regions; in one region of Bolivia, exhibited the most restricted height range of any of 16 species of dead-leaf specialists. Almost always with mixed-species understorey flocks of *Thamnomanes* antshrikes, other antwrens, foliage-gleaners (Furnariidae) and other insectivores. Food obtained almost exclusively from recesses of curled, arboreal dead leaves; in 81 observations of foraging in a study in Bolivia, dead leaves comprised 94% of foraging substrates. Forages mostly along slender branches of understorey trees and on understorey palms (e.g. *Geonoma*), less frequently in vine tangles; progresses rapidly by short hops, often hitching from side to side, ignoring live foliage and systematically pausing to inspect arboreal dead leaves, both single hanging ones and clusters trapped in vines, in branches and, especially, in tops of small palms; in Bolivian study, medium-sized (10–15 cm) leaves and palm leaves used most often. Gleans prey from smaller dead leaves mostly by reaching up, with neck and legs extended, or by hanging head first from adjacent perches; from larger leaves (e.g. *Cecropia*) by hanging acrobatically like a tit (Paridae) from sides (often upside-down) or bottom of leaf or by perching atop it, and from understorey palms by clinging to tips of leaflets; usually rummages audibly for 5–30 seconds (sometimes up to 1 minute or longer) in a single leaf or cluster, and probes by delicately inserting the bill, or sometimes the entire head, into curls and crevices. When larger arthropod extracted, usually hops or flies to a nearby horizontal perch and bashes prey against branch, sometimes for up to a minute, to subdue it. Because of time spent in searching individual leaves or clusters, combined with protracted handling time for large prey, this species is often left behind after more active flockmates have moved on some distance.

**Breeding.** Almost nothing known. Female with yolking egg in Mar in Venezuela (Cerro de la Neblina, in Amazonas).

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout most of its range. This includes some large protected areas, among them Yacapana, Duida and La Neblina National Parks and Caura Forest Reserve, in Venezuela, and Jaú and Serra do Divisor National Parks, in Brazil. Range also contains large, contiguous expanses of intact habitat which, although not formally protected, appear to be at minimal risk of development in the near term.

**Bibliography.** Alverson, Moskovits & Shopland (2000), Alverson, Rodriguez & Moskovits (2001), Cadena, Álvarez *et al.* (2000), Cory & Hellmayr (1924), Hackett & Rosenberg (1990), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Krabbe, Isler *et al.* (1999), Parker & Remsen (2003a), Parker & Remsen (1987), Remsen & Parker (1984), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rosenberg (1993, 1997, 2003), Sick (1993), Stotz (1990b), Stotz *et al.* (1996), Willard *et al.* (1991), Zimmer, J. T. (1932a), Zimmer, K. J. (2003a).

## 80. Brown-backed Antwren

### *Myrmotherula fieldsaii*

French: Myrmidon de Fjeldsa

German: Braunrücken-Ameisenschlüpfer

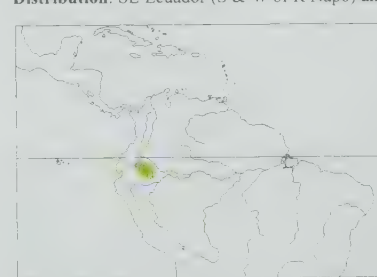
Spanish: Hormiguerito del Yasuni

**Other common names:** Yasuni Antwren

**Taxonomy.** *Myrmotherula fieldsaii* Krabbe *et al.*, 1999, Río Tiputini, Napo, Ecuador.

Forms a superspecies with *M. spodionota* and *M. haematonota*. Genetic, morphological and behavioural analyses indicate that the three are part of a monophyletic group that also includes *M. gutturalis*, *M. fulviventris*, *M. leucophthalma*, *M. ornata* and *M. erythrura* (the “stipple-throated antwren assemblage”), and which may not be closely related to other species placed in the genus. Monotypic.

**Distribution.** SE Ecuador (S & W of R Napo) and extreme NC Peru (N Loreto S to C R Tigre).



**Descriptive notes.** 10–11 cm; 9–10 g. Male has crown olive-brown, upperparts dark yellowish-brown, flight-feathers and tail darker with rufous tinge; wing-coverts blackish-brown, greater coverts tipped pale buff, median and lesser coverts tipped whitish; throat black, spotted white; head side, breast and upper belly light grey, lower belly, flanks and crissum pale yellowish-brown. Female differs in having head side ochraceous, chin and throat mostly white with dark streaks, underparts buffy brown. **Voice.** Loudsong a trill of abrupt, sibilant notes first ascending and then gradually dropping in pitch, similar in pattern to that of

*M. haematonota* (differences not yet established). Calls include ascending series of notes, also abrupt chips, and rattle.

**Habitat.** Understorey of evergreen forest (*terra firme*, transitional, to lesser extent *várzea*), at 150–300 m. May show preference for areas with abundance of palms in understorey.

**Food and Feeding.** Almost nothing published. Feeds on a variety of insects, particularly orthopterans (Gryllidae, Tettigoniidae) and coleopterans, probably also cockroaches (Blattidae); also on spiders. Food taken almost exclusively from recesses of curled, arboreal dead leaves. Closely associated pairs, individuals, or family groups forage mostly 1–8 m above ground, usually with mixed-species flocks of *Thamnomanes* antshrikes, other antwrens, foliage-gleaners (Furnariidae), Tawny-crowned Greenlets (*Hylophilus ochraceiceps*), Red-crowned Ant-tanagers (*Habia rubica*) and other insectivores. Often in same flocks as *M. erythrura*, then invariably foraging lower than that species. In upland forest, forages mostly along slender branches of understorey trees and on understorey palms (e.g. *Geonoma*); in transitional forest, more often in vine tangles. Progresses rapidly by short hops, often hitching from side to side, ignoring live foliage and systematically pausing to inspect arboreal dead leaves, both single hanging ones and clusters of dead leaves trapped in vines, branches and, especially tops of small palms. Gleans prey from smaller dead leaves mostly by reaching up, with neck and legs extended, or by hanging head first from adjacent perches; from larger leaves (especially dead palm fronds) by hanging acrobatically like a tit (Paridae) from sides (often upside-down) or bottom of leaf, or by perching atop it; usually spends several seconds



(sometimes up to 1 minute or more) in rummaging audibly in a leaf or leaf cluster, probing by delicately inserting the bill, even the entire head, into curls and crevices. Also inspects frayed and dying ends of mostly live palm fronds, and curled brown fronds of tree-ferns. Deals with larger prey items usually by hopping or flying to a nearby horizontal perch, where it bashes the arthropod forcefully against the branch, sometimes for up to a minute, until prey subdued. Long time spent in searches of individual leaves/clusters, combined with protracted handling time for large prey, means that this species is often left behind by more active flockmates.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and conservation.** Not globally threatened. Fairly common within the huge (7281 km<sup>2</sup>) Yasuni National Park, in Ecuador, much of which would appear to represent suitable habitat. Yasuni alone should allow for protection of a substantial population of this species, provided that intensified regional development through oil exploration and drilling is not allowed to compromise the ecological integrity of the park.

**Bibliography.** English (1998), Isler & Whitney (2002), Krabbe, Isler *et al.* (1999), Ridgely & Greenfield (2001), Sangster (1999a), Zimmer, J.T. (1932a), Zimmer, K.J. (2003a).





*ssp ornata*

*ssp meridionalis*

*ssp axillaris*

*ssp luctuosa*

*ssp albigula*

*ssp schisticolor*

*ssp interior*

*ssp sanctaemartae*

PLATE 52

inches

cm

3

8

85

81

82

83

84

86

87

88



## 81. Ornate Antwren

*Myrmotherula ornata*

French: Myrmidon orné

German: Schmuckameisenschlüpfer

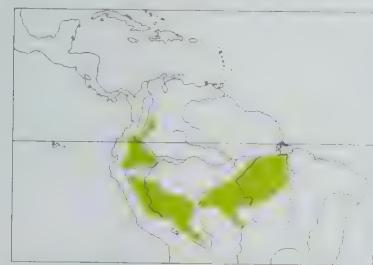
Spanish: Hormiguerito Ornado

Other common names: Chestnut-saddled Antwren; Black-throated Antwren (*atrogularis*)**Taxonomy.** *Formicivora ornata* P. L. Slater, 1853, "Bogotá" trade skin, Colombia.

Genetic, morphological and behavioural analyses indicate that this species is part of a monophyletic group that also includes *M. gutturalis*, *M. fulviventris*, *M. leucophthalma*, *M. spodiota*, *M. haematonota*, *M. feldsaai* and *M. erythrura* (the "stipple-throated antwren assemblage"), and which may not be closely related to other species placed in the genus. Validity of races and ranges listed below uncertain; *saturata* possibly not diagnosably different from nominate, and it is unclear whether *meridionalis* and *atrogularis* intergrade; alternatively, *atrogularis* (with *meridionalis*) and also *hoffmannsi* may be shown to be two distinct species. Identity of rufous-backed birds near base of Andes in SC Peru (Cuzco) is uncertain. Further research required. Five subspecies recognized.

**Subspecies and Distribution.***M. o. ornata* (P. L. Slater, 1853) - C Colombia (Andean foothills in Meta).*M. o. saturata* (Chapman, 1923) - SC Colombia (E Nariño, E Cauca, Putumayo), E Ecuador and NE Peru (N of R Marañón, W of R Napo).*M. o. atrogularis* Taczanowski, 1874 - EC Peru (San Martín S to Ayacucho and Cuzco, E to Ucayali) and extreme SW Amazonian Brazil (extreme SW Amazonas, W Acre).*M. o. meridionalis* J. T. Zimmer, 1932 - SE Peru (Madre de Dios, Puno), adjacent Brazil (E Acre) and NW Bolivia (Pando, La Paz, Cochabamba).*M. o. hoffmannsi* Hellmayr, 1906 - SE Amazonian Brazil E of R Madeira (in E Rondônia, W & N Mato Grosso, and Pará W of R Tocantins).

**Descriptive notes.** 9-10 cm; 8.5-11 g. Male nominate race is grey above, back and rump rufous-chestnut; remiges and tail blackish-grey, wing-coverts tipped white, tail thinly edged white; throat black; underparts pale grey, flanks and crissum tinged brown. Female has grey of crown and upperparts replaced by greyish olive-brown, black throat streaked white, head side and underparts olive-tinged cinnamon, darkest on flanks and crissum. Race *saturata* is very like nominate, perhaps darker, more deeply coloured, female slightly darker; *hoffmannsi* male is paler below, tinged yellowish-brown posteriorly, female lacks throat



patch, is buff with cinnamon-rufous tinge below and tinged olive posteriorly; *meridionalis* lacks rufous-chestnut on upperparts, male pale grey below, female intermediate between grey and greyish olive-brown above, buff with cinnamon-rufous tinge below; *atrogularis* resembles previous, but female greyer above, no cinnamon tinge below. **VOICE.** Loudsong a short (e.g. 1-1.5 seconds) high-pitched trill starting with emphatic note, descending slightly in pitch and often in intensity; in intraspecific agonistic display, song consists of a countable series of raspy notes usually descending in pitch, length variable. Common call a sharp, high-pitched "seet".

**Habitat.** Understorey and mid-storey of lowland and foothill evergreen forest (*terra firme*, transitional, *várzea*, *ligapó*), to 1400 m. Widely distributed in forest where no closely related congeners present. In areas inhabited also by close relatives, is generally (not always) restricted to particular habitats, such as extensive stands of bamboo (*Guadua*) within forest, or forest-edge and light-gap vine tangles away from bamboo, or riverine habitats, including second growth. Whether habitat differences are consistent with genetic differences remains to be investigated. Regularly occurs together with *M. leucophthalma* in bamboo stands in E Peru (Madre de Dios), but replaces that species in bamboo in upland and transitional forest in Mato Grosso (Brazil).

**Food and Feeding.** Feeds on a variety of insects and spiders; analysis of stomach contents of seven specimens from Peru revealed that commonest prey were orthopterans, i.e. katydids (Tettigoniidae) and crickets (Gryllidae), followed in order by spiders, coleopterans (virtually all less than 10 mm), heteropterans, cockroaches (Blattidae), and larvae. In an experiment using birds in outdoor cages, this species rejected harvestmen (Opiliones), but readily captured and consumed butterflies (Lepidoptera) and dragonflies (Odonata); it would not eat small lizards or frogs. Food taken almost exclusively from recesses of curled, arboreal dead leaves; in 538 observations of foraging in a study in Peru (Madre de Dios), dead leaves comprised 98% of foraging substrates. Closely associated pairs, individuals, or family groups forage mostly 4-9 m above ground, less frequently at 1-3 m and up to 20 m; in some regions usually with mixed-species flocks of other insectivores, but in others joins mixed flocks only as they move through its more restricted territory. In intraspecific displays, males face each other c. 30 cm apart, with wings half-opened and tail fanned, and raise and lower the head and tail while vocalizing incessantly. Where associated with bamboo thickets, forages mostly in crowns of those plants; in other areas mostly in dense mid-storey vine tangles. Progresses rapidly by short hops, often hitching from side to side and flicking its wings, mostly ignoring live foliage (although occasionally scans and opportunistically gleans from live leaves), and systematically pausing to inspect arboreal hanging dead leaves and clusters of dead leaves trapped in vines and branches; in one study in S Peru, medium-sized (10-15 cm) leaves and bamboo leaves were used most often. Gleans prey from smaller dead leaves mostly by reaching up, with neck and legs extended, from adjacent perches (typically vines or bamboo stems), or by hanging head first with the tail fanned and used as a brace against perch; from larger leaves less frequently by hanging acrobatically like a tit (Paridae) from sides (often upside-down) or bottom of the leaf or by perching atop it; rummages audibly for usually 2-10 seconds (sometimes up to 1 minute) in a single leaf or cluster, probing by delicately inserting the bill, sometimes the entire head, into curls and crevices. Seems to spend less time in probing each leaf than do other *Myrmotherula* dead-leaf specialists, and also more likely to glean dead leaves from adjacent perches, rather than while hanging from or sitting on the leaf itself; this especially true of individuals in bamboo thickets, as most dead bamboo leaves are small enough to be quickly scanned and are not big enough to make good perches. When larger arthropods extracted, usually hops or flies to a nearby horizontal perch and bashes the prey forcefully against branch, sometimes for up to a minute, until it is subdued. Studies in Peru and observations in Brazil showed that, where this species and *M. leucophthalma* occur together, they differ significantly in foraging behaviour, present species

using higher foraging height, investigating smaller leaves and, in some regions, specializing on bamboo (instead of palms); evidence suggests that, in addition to responses to resource availability, species-specific foraging niches in this guild are influenced by co-occurring species, but behavioural studies are needed in further localities.

**Breeding.** Little known. Dec-Jul in lowland Ecuador; young fledglings seen in Jul in SE Peru.**Movements.** None recorded; presumed resident throughout range.**Status and Conservation.** Not globally threatened. Fairly common, but locally distributed throughout. Its large range includes several large protected areas, e.g. Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, Serra do Divisor and Tapajós National Parks and Cristalino State Park, in Brazil, and Madidi National Park, in Bolivia. In addition, vast contiguous areas of intact habitat within the regions occupied by this species appear to be at little near-term risk of development, although they are not formally protected.

**Bibliography.** Cory & Hellmayr (1924), Foster *et al.* (1994), Hackett & Rosenberg (1990), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Kratter (1997a), Munn (1985), Oren & Parker (1997), Parker (2003a), Pearson (1977a), Remsen & Parker (1984), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rosenberg (1993, 1997, 2003), Servat (1996), Sick (1993), Stotz (1990b), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Wiley (1980), Zimmer, J.T. (1932b), Zimmer, K.J. (2003a), Zimmer, K.J., Parker *et al.* (1997).

## 82. Rufous-tailed Antwren

*Myrmotherula erythrura*

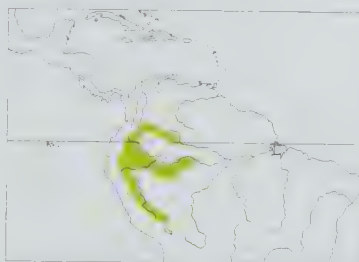
French: Myrmidon à queue rousse

Spanish: Hormiguerito Colirrufo

German: Rostschwanz-Ameisenschlüpfer

**Taxonomy.** *Myrmotherula erythrura* P. L. Slater, 1890, Rio Napo, Ecuador.

Genetic, morphological and behavioural analyses indicate that this species is part of a monophyletic group that also includes *M. gutturalis*, *M. fulviventris*, *M. leucophthalma*, *M. spodiota*, *M. haematonota*, *M. feldsaai* and *M. ornata* (the "stipple-throated antwren assemblage"), and which may not be closely related to other species placed in the genus. Races possibly intergrade. Two subspecies recognized.

**Subspecies and Distribution.***M. e. erythrura* P. L. Slater, 1890 - extreme NW Brazil (W bank of upper R Negro), SE Colombia (Meta E to Vaupés and S to Putumayo), E Ecuador and NE Peru (N of R Marañón and R Amazon).*M. e. septentrionalis* J. T. Zimmer, 1932 - E Peru (along base of Andes S of R Marañón S to Puno) and WC Amazonian Brazil (scattered records from Amazonas S of R Solimões, E to Tefé and middle R Juruá).

**Descriptive notes.** 10-11 cm; 9.5-12.5 g. Male has forehead to mantle olive-brown, back and tail rufous-chestnut; remiges brown, wing-coverts mostly blackish-brown, tipped pale buff or white; throat whitish, irregularly streaked black; neck side and breast grey, lower underparts light olive-brown to buff-brown. Female is similar to male, except side of head tinged buff, throat and breast ochre, lower underparts tinged ochre. Race *septentrionalis* female has side of head and underparts more ochraceous. **VOICE.** Loudsong apparently a countable, more or less evenly paced series of high-pitched "wheet" notes (e.g. 9 notes, 3-5 seconds) of

variable shape, but mostly upslurred, duration changes with each song (usually 5-12 notes); a more rapid trill, similar to that of *M. haematonota*, has also been attributed to this species; in intraspecific agonistic display, song consists of a countable series of raspy notes, length variable. Call a short, high pitched, upslurred note, also a rattle.

**Habitat.** Understorey and mid-storey of lowland and foothill evergreen forest, primarily *terra firme*, but also transitional and *várzea*; mostly below 600 m, locally to 900 m.

**Food and Feeding.** Little published. Feeds on insects and spiders, taken almost exclusively from recesses of curled, arboreal dead leaves. Closely associated pair-members, individuals, or family groups forage mostly 5-15 m above ground, also at times near ground, usually with mixed-species flocks of other insectivores, including *Thamnomanes* antshrikes, woodcreepers (Dendrocolaptidae), foliage-gleaners (Furnariidae) and other antwrens. In intraspecific display, males face each other c. 30 cm apart, fluff out back plumage, spread wings and tail, and pivot from side to side, vocalizing constantly. Forages actively, but deliberately, often in vine tangles in interior of larger trees, or in crowns of understorey trees, hitching along vines and slender branches in zigzag progression; ignores live foliage, but systematically pauses to scan suspended single dead leaves, as well as dead-leaf clusters. Gleans prey from dead leaves by reaching up, out or down from nearby perches; often hangs head first to probe curled leaves with its bill, and frequently hangs acrobatically from undersides or margins of larger dead leaves. Commonly spends 10 seconds or more in probing a single leaf or cluster, often audibly rustling the leaf but not tearing it apart.

**Breeding.** Little known. Nest-building in Feb in Ecuador. Nest in Peru (season not recorded) described as dome-shaped with side entrance, compactly constructed from dried leaves, built in dense branches in bush or inside hanging palm frond; pair in Ecuador carrying nesting material to tangle of dead leaves and vines 2 m above ground, next to stream.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Not well known; considered fairly common throughout most of its range. Regions inhabited by this species contain several protected areas (e.g. Yasuni National Park, in Ecuador, and Manu National Park and Biosphere Reserve and Pacaya-Samiria National Reserve, in Peru) with substantial amounts of suitable habitat; they also encompass extensive contiguous areas of intact habitat which, although not formally protected, appear to be at little risk of development in the near future.

**Bibliography.** Alvarez (1994), Alverson *et al.* (2001), Arvin (2003), Cory & Hellmayr (1924), English (1998), Hackett & Rosenberg (1990), Hilty & Brown (1986), Isler & Whitney (2002), Koepcke (1972), Pearson (1977a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Sick (1993), Stotz *et al.* (1996), Tallman & Tallman (1994), Wiley (1980), Willis (1984a), Zimmer, J.T. (1932b), Zimmer, K.J. (2003a).



## 83. White-flanked Antwren

*Myrmotherula axillaris*

French: Myrmidon à flanes blancs

Spanish: Hormiguerito Flanquialbo

German: Weißflanken-Ameisenschlüpfer

Other common names: Black Antwren

**Taxonomy.** *Myrmotherula axillaris* Vieillot, 1817, Guiana = French Guiana.

According to genetic studies, may be most closely related to *M. longipennis* and *M. menetriesii*. Also, *M. fluminensis* thought by some to be possibly a variant of race *luctuosa* of present species or, earlier, a hybrid between it and *M. unicolor*. Often grouped with those four species and *M. schisticolor*, *M. sunensis*, *M. minor*, *M. iheringi*, *M. behni*, *M. grisea*, *M. snowi* and *M. urosticta* as the "grey antwren assemblage", although this grouping possibly not monophyletic. Substantial geographical differences in vocalizations strongly suggest that present species should be split into several distinct species, but further work required. Otherwise, morphological distinctions between races *heterozyga* and *fresnayana* unclear. Distributions of races given below are tentative, based primarily on previous published statements. Six subspecies recognized.

**Subspecies and Distribution.**

*M. a. albifluga* Lawrence, 1865 - Caribbean slope from SE Honduras S to Colombia (except Santa Marta Mts), and Pacific slope from C Panama (Panamá, Darién) S to Ecuador.

*M. a. melaena* (P. L. Sclater, 1857) - Santa Marta Mts and Colombia E of Andes, W Venezuela (Andean slopes E to Mérida and Barinas and, S of R Orinoco, E to R Caura), NW Brazil (upper R Negro S to N bank of R Amazon), E Ecuador and NE Peru (Amazonas, San Martín, Loreto).

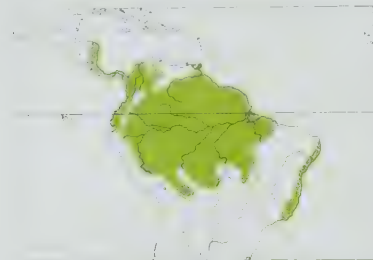
*M. a. axillaris* (Vieillot, 1817) - E Venezuela (Apure, Monagas, Delta Amacuro, and S of R Orinoco E of R Caura), Trinidad, the Guianas, E Amazonian Brazil (from both banks of lower R Negro E to Amapá and, S of R Amazon, E of R Madeira to Maranhão and S to NE Mato Grosso and Tocantins) and NE Bolivia (NE Santa Cruz).

*M. a. heterozyga* J. T. Zimmer, 1932 - EC Peru (Ucayali S to Madre de Dios) and SW Amazonian Brazil (W of R Madeira).

*M. a. fresnayana* (d'Orbigny, 1835) - extreme SE Peru (Puno) and NW Bolivia (W of R Mamoré, and along base of Andes E to W Santa Cruz).

*M. a. luctuosa* Pelzel, 1868 - coastal E Brazil (Paraíba S to Rio de Janeiro).

**Descriptive notes.** 9-10 cm; 7-9 g. Male nominate race is dark grey, concealed white interscapular patch; wings and tail blackish, remiges edged grey, wing-coverts and tail tipped white; throat, breast and centre of belly black, flanks white, crissum grey with subapical black spots and pale grey tips. Female is olive-brown above, shading to reddish yellow-brown on rump, with wings and tail dark brown, edged light cinnamon-rufous, wing-coverts edged cinnamon, side of head mottled pale olive-brown, throat and flanks white, rest of underparts rich buff, becoming olive-brown on sides, reddish-brown on



crissum. Juvenile male is like female, except wings and anterior upperparts mixed yellow-brown and grey, underparts mixed white and grey, tail like adult male; subadult male lacks black on throat and breast, has wings and coverts edged and spotted pale yellow-brown. Race *albifluga* is blacker (variable), scapulars strongly edged white, female is greyer above with wing-coverts tipped pale buff, paler below, crissum buff; *melaena* male resembles previous, female is similar to nominate but paler; *heterozyga* and *fresnayana* males are slightly paler, black of underparts more confined, females paler and less rufescent throughout (E populations typically most pale, but variable), tips of rectrices buff; *luctuosa* male is somewhat paler, flanks mostly pale grey (rather than white), white tail tips larger, female with head ashy grey, upperparts olive-tinged grey, wing-covert tips buff, rather faint, underparts ochraceous. Voice. Loudsong of nominate race, *heterozyga* and *fresnayana* a rapid uncountable series of abrupt notes, somewhat low-pitched (e.g. 3-2.2 kHz) compared with congeners, dropping sharply in pitch and gaining in intensity at beginning, then more or less levelling, pace varies geographically (slowest in SE Amazonia); of *albifluga* and *melaena* a countable, evenly paced series of whistles (e.g. 9 notes, 2-8 seconds), dropping in pitch, but gaining and then dropping in intensity; of *luctuosa* begins and ends with short harsh (frequency modulated) notes, middle ones become longer and clearer, pace slows then speeds up, intensity increases then decreases, pitch is flat and notes countable (e.g. 13 notes, 2-9 seconds). Common call (most races) typically of two notes, first shorter and higher-pitched, sometimes extended to 3-4 notes, other calls include sharp upslurred "weep", sometimes doubled or tripled, also very short "pip", much longer "chirr", and a rattle (possibly not all calls delivered by all races); *luctuosa* call a short, mostly downslurred note, singly or sometimes repeated, also calls similar to those of other races.

**Habitat.** Understorey and mid-storey of evergreen forest (*terra firme*, transitional, and *várzea* *igapó*) and second-growth woodland, to 1200 m. In most parts of range, not obviously confined to any particular micro-habitat type within forest. In some regions, however, appears to be highly restricted to one micro-habitat type, such specialization sometimes varying geographically among populations currently considered as belonging to same taxon. In Brazil, nominate race appears largely restricted to stands of *Guadua* bamboo within forest in N Mato Grosso, but virtually confined to river-edge forest without bamboo in other locations in S Amazonia (SW Pará, SE Amazonas, NE Rondônia) and in parts of Amapá; conversely, populations of same taxon in E Venezuela and much of N Brazil show no such specialization. In Nicaragua, *albifluga* seems to require light-gaps in its territory.

**Food and Feeding.** Feeds mostly on insects and spiders. Stomach contents of specimens included following: from Surinam, spiders, dipterans (Tipulidae), lepidopteran larvae; from Amazonian Brazil, cockroaches (Blattidae), true bugs (Hemiptera), beetles (Coleoptera); and from Peru/Bolivia (21 specimens), in decreasing order of proportion, orthopterans, beetles, spiders, true bugs (Heteroptera), larvae, cockroaches (Blattidae), ants (Formicidae), dipterans. Also catches adult lepidopterans (moths), but clips and removes the wings before consuming body. In extensive study in Peru/Bolivia, orthopterans, beetles and larvae were selected more than expected, and many fewer ants, flies and wasps (Hymenoptera) were taken than would be predicted, on basis solely of their respective availability; in same prey-selection experiment, but using birds in outdoor cages, nearly all ants, flies and wasps and most beetles and heteropterans were ignored or rejected, but the birds readily consumed cockroaches, spiders, crickets (Gryllidae), katydids (Tettigoniidae), some grasshoppers (Acrididae), butterflies (Lepidoptera) and dragonflies (Odonata), as well as a 5-cm lizard, which was captured, beaten on branch, and swallowed whole. In most regions, forages in pairs, singly or in family groups, mostly 2-12 m above ground in relatively open area between lower dense mid-storey and upper parts of dense understorey. Mean foraging height in 181 observations

at Cocha Cashu (Peru) was 5-4 m, and in 150 observations in Manaus (Brazil) 7-1 m; forages lower in regions of restricted habitat usage, e.g. elsewhere in Brazil means of 3-8 m in Espírito Santo (573 observations) and 3-1 m in Rondônia (206 observations). Very active, constantly hopping and changing direction, scanning foliage between movements but seldom pausing for more than 2 seconds, and always flicking the wings to reveal white flank patches. Obtains prey primarily from upper and lower surfaces of live leaves (mostly), stems and vines by perch-gleans; also with acrobatic hangs from branchlets or leaf petioles, short lunging stabs, and short sallies (these often fluttering upwards to underside of overhanging vegetation). In E Brazil (*luctuosa*) about a quarter of all foraging manoeuvres aimed at dead-leaf clusters; rather than probing these as do congeneric dead-leaf specialists, it strikes them with the bill to dislodge insects. Inspects suspended dead leaves also in Amazonia, but less frequently. Travels alone in some regions, but in most occurs typically with mixed-species flocks, exact composition of which varies greatly over extensive range. Where a core member of understorey flocks, it shares a common territory with other thamnophilids in the flock but appears not to be a flock-leader. Where occurring in same mixed-species flocks as *M. longipennis*, tends to spend much more time in the viny tangles along trunks and in leafier, more densely foliated portions of understorey trees; also sallies or hover-gleans much less than that species. At a study site in Nicaragua (*albifluga*), tended not to occur in same mixed flocks as *Microhousia quixensis*, but unclear whether this reflected interspecific competition or micro-habitat preferences. Occasional records from Panama, Colombia, Trinidad, Guyana, Surinam and Brazil of attending army ants (mostly *Eciton burchelli*, in Panama occasionally also *Labidus praedator*), although most visits less than 5 minutes in duration; other than a tendency to descend lower, little evidence that it modifies its foraging behaviour in presence of ants.

**Breeding.** Mar-Jul in Costa Rica, Mar-Aug in Panama, Jul-Dec and Feb-Mar in French Guiana, Feb-Oct in E Ecuador, Sept-Nov in E Peru; Jun-Dec in N Brazil, and juveniles fed by adults in Sept in SC (Mato Grosso); one record of adult feeding fledglings just out of nest in Sept in Surinam. Additional nest and egg descriptions from Brazil, Peru, Trinidad, Venezuela. Nest a deep cup composed largely of dead leaves and leaf skeletons (including leaves of bamboo and palms), often with asymmetrically placed dead leaves hanging from bottom, lined, held together and attached at rim with black fungal rhizomorphs, suspended from horizontal fork between twigs, usually with overhanging leaf or leaves, 0.2-4 m above ground in understorey sapling or shrub. Normal clutch 2 eggs, white or pinkish-white, with reddish-brown, deep purple and/or lilac gray speckles, scrawls and blotches concentrated in wreath at larger end; incubation by both parents during day, only female at night, period in Panama 16-19 days; at two nests in Panama, parents incubated for only 76% and 50%, respectively, of time during which observed, suggesting lower levels of nest attendance than in many other thamnophilids; brooding and feeding of nestlings shared by both parents, nestling period in Panama 8-12 days. Nesting success in one year at site in Panama was 22-2% for 18 nests.

**Movements.** Presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout its large range. Regions in which it occurs contain numerous protected areas, as well as vast contiguous areas of intact, suitable habitat that are not formally protected. Furthermore, this species has been shown to survive in secondary forest and smaller forest isolates, and is seemingly more tolerant of disturbance than are congeners. The isolated E Brazilian race *luctuosa* is of more concern, given its relatively small range and the overall regional level of deforestation; at present, it remains fairly common in several protected areas, including Sooretama Biological Reserve, Linhares Natural Reserve, Monte Pascoal National Park, Porto Seguro/Florestas Rio Doce SA Forest, and Murici Ecological Reserve.

**Bibliography.** Belcher & Smoother (1936), Blake & Loiselle (2001), Botero (2002), Cherrie (1916a), Cody (2000), Cory & Hellmayr (1924), Eisenmann (1952), Foster *et al.* (1994), Gonzaga (2001), Gradwohl & Greenberg (1980, 1982a), Greenberg (1984), Greenberg & Gradwohl (1980, 1983, 1985, 1986, 1997), Hackett & Rosenberg (1990), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Johnson (1954), Johnston *et al.* (1997), Koepeke (1972), Levey (1988), Marin (1993), Mason (1996), Meyer de Schauensee & Phelps (1978), Munn (1984, 1985), Munn & Terborgh (1979), Novaes (1970), O'Neill & Pearson (1974), Oniki (1971b), Oniki & Willis (1982), Oren & Parker (1997), Pearson (1977a), Powell (1989), Reynaud (1988), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robinson *et al.* (2000), Rosenberg (1993), Schönwetter & Meise (1967), Schubart *et al.* (1965), Sick (1993), Skutch (1945a, 1946, 1969c), Slud (1964), Sneath (1935), Stiles & Skutch (1989), Stotz (1990b), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Terborgh *et al.* (1990), Tostain (2003), Tostain *et al.* (1992), Wetmore (1972), Whitney & Pacheco (1995, 1997), Wiley (1971, 1980), Willis (1980, 1984a), Willis & Eisenmann (1979), Zimmer, J.T. (1932b), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997), Zimmer, K.J., Parker *et al.* (1997).

## 84. Slaty Antwren

*Myrmotherula schisticolor*

French: Myrmidon ardoisé

Spanish: Hormiguerito Pizarroso

German: Hochland-Ameisenschlüpfer

**Taxonomy.** *Formicivora schisticolor* Lawrence, 1865, Turrialba, Cartago, Costa Rica.

Close relationship to *M. sunensis* and *M. minor* suggested by similarities in morphology, behaviour and vocalizations. Often grouped with those and *M. axillaris*, *M. iheringi*, *M. fluminensis*, *M. behni*, *M. grisea*, *M. unicolor*, *M. snowi*, *M. longipennis*, *M. urosticta* and *M. menetriesii* as the "grey antwren assemblage", although this grouping possibly not monophyletic. Three subspecies recognized.

**Subspecies and Distribution.**

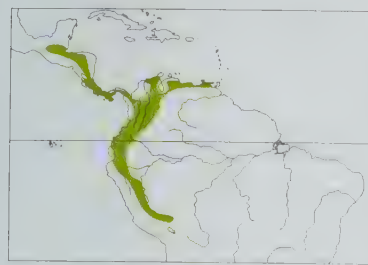
*M. s. schisticolor* (Lawrence, 1865) - Extreme SE Mexico (Chiapas) S on lower mountain slopes (Caribbean slope N of Nicaragua, mostly Pacific slope in Panama) to Colombia (W & WC Andes) and Ecuador (Pacific slope).

*M. s. sanctaemartae* J. A. Allen, 1900 - NE Colombia (Santa Marta Mts and Perijá Mts) and N Venezuela (Perijá Mts, Andes and coastal range E to Sucre).

*M. s. interior* (Chapman, 1914) - Andes in Colombia (W slope of C range, E range, E slope of S range) and on E slope S to Peru (S to Puno).

**Descriptive notes.** 9-10 cm; 8.5-10 g. Male nominate race is dark grey, wings darker, throat and upper breast black; concealed white interscapular patch; wing-coverts and crissum feathers with black subapical spot and whitish tip; tail thinly edged white in fresh plumage. Female is greyish-olive above, flight-feathers and tail browner, wing-coverts edged rufous, throat pale cinnamon, centre of underparts cinnamon with tawny tinge, mixed with olive-brown on sides and flanks, lower underparts yellowish-brown. Subadult male is like female, but black throat feathers starting to appear. Race *sanctaemartae* male is substantially paler than nominate, black restricted to throat and centre of uppermost breast, wing edgings browner, female much greyer on upperparts, underparts more extensively yellow-brown; *interior* male is intermediate, white interscapular patch minimal, female is more blue-grey and darker above than previous, more extensively cinnamon, tinged





tawny, below. VOICE. Loudsong consists of upslurred whistle sounding like "wheet", repeated singly at intervals of 1.5-2 seconds, or in groups of 2-4 at shorter intervals (e.g. 0.9-1.2 seconds) with longer spaces between groups. Calls include downslurred nasal whine, given singly, also same type of note turned into nasal "chirr" by overtones; also sharp "chip" notes, sometimes strung together into twitter. **Habitat.** Understorey of montane and foothill evergreen forest and adjacent second-growth woodland, mostly at 600-1700 m; locally to 2400 m or down to near sea-level. Primarily in wet, mossy cloudforest in most

of range, and generally at higher elevations than most congeners, but locally in semi-humid forest down to lowlands of Pacific slope in Costa Rica, Panama and Ecuador, and on Caribbean slope in Venezuela.

**Food and Feeding.** Little published. Feeds on various insects and spiders; stomach contents of single Panama specimen included homopterans (Fulgoroidea) and many spiders. Forages in pairs, individually or in family groups, 0-12 m above ground (mostly 1-6 m); sometimes alone, but more often with mixed-species flocks of other insectivores. Very active, constantly hopping and changing direction, scanning foliage between movements, but seldom pausing for more than 2 seconds, and always flicking the wings. Gleans prey from upper and lower surfaces of live leaves (mostly), stems and vines, using reaches, acrobatic hanging from branchlets or leaf petioles, short lunging stabs, also short sallies (these often fluttering hover-gleans upwards to underside of overhanging vegetation). Often jumps up and strikes undersides of large leaves with enough force to move them visibly, sometimes clinging acrobatically beneath a leaf for fraction of a second before abruptly fluttering down a metre or so to a lower perch, or even to the ground in pursuit of dislodged prey; sudden "flutter-downs" are a common feature of the foraging repertoire. Sometimes drops briefly to ground to take prey from surface of leaf litter. Regularly inspects suspended dead leaves and dead-leaf clusters, sometimes lingering for up to 20 seconds at a leaf; unlike true dead-leaf specialists, does not skip from one leaf to the next while ignoring intervening live vegetation, but opportunistically scans dead leaves in the course of its foraging; inspects dead leaves either by clinging acrobatically to the margins or underside or by reaching or hanging from an adjacent perch. Once observed persistently following a swarm of army ants (*Neivamyrmex*) at c. 1700 m in Colombia; also, one record of ant-following in Costa Rica.

**Breeding.** Mar-Jul in Costa Rica; adults feeding begging juveniles in Jan-Feb in Venezuela. Nest a deep cup of black fungal rhizomorphs, thinly woven (contents often visible through the fabric), bound by cobwebs, suspended by rim from horizontal fork or two diverging or nearly parallel branches of sapling 0.9-2 m above ground. Normal clutch 2 eggs, white or cream, blotched, speckled or scrawled with reddish or purplish-brown throughout, or markings concentrated in wreath around larger end; incubation by both parents during day, male taking greater share, only by female at night, period at one nest c. 15 days; chick hatches without down, and with yellow lining of mouth; brooding and feeding of chicks by both parents, nestling period c. 9 days.

**Movements.** None recorded, presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common over most of its rather large range. A number of protected areas exist within regions inhabited by this species, e.g.: Carara Biological Reserve, Monteverde Forest Reserve, La Amistad International Park and Braulio Carrillo National Park, in Costa Rica; Volcán Barú National Park and Fortuna Forest Reserve, in Panama; Henri Pittier, Guatopo and Yacambú National Parks, in Venezuela; Sumaco-Galeras and Machalilla National Parks, in Ecuador; and Manu National Park and Biosphere Reserve, in Peru. The foothill and middle-elevation slopes favoured by this species are often subject to the most intensive pressure from human colonization and cultivation, which could place some of its populations at risk.

**Bibliography.** Alverson *et al.* (2001), Behrstock (2003), Cory & Hellmayr (1924), Gochfeld & Tudor (1978), Hackett & Rosenberg (1990), Hilty (1997, 2003a), Hilty & Brown (1986), Howell & Webb (1995a), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Miller (1963), Monroe (1968), Parker & Carr (1992), Powell (1979), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Schönwetter & Meise (1967), Schulenberg & Awbrey (1997a), Skutch (1969c), Slud (1964), Stiles & Skutch (1989), Stotz *et al.* (1996), Tallman & Tallman (1994), Vallyely (2001), Wetmore (1972), Whitney (1994a), Zimmer, J.T. (1932b), Zimmer, K.J. (2003a).

## 85. Rio Suno Antwren

### *Myrmotherula sunensis*

**French:** Myrmidon du Suno

**Spanish:** Hormiguerito del Suno

**German:** Kleiner Silberameisenschlüpfer

**Other common names:** Suno Antwren

**Taxonomy.** *Myrmotherula sunensis* Chapman, 1925, Rio Suno, Napo, Ecuador.

Close relationship to *M. schisticolor* and *M. minor* suggested by similarities in morphology, behaviour and vocalizations. Often grouped with those and *M. axillaris*, *M. iheringi*, *M. fluminensis*, *M. behni*, *M. grisea*, *M. unicolor*, *M. snowi*, *M. longipennis*, *M. urosticta* and *M. menetriesii* as the "grey antwren assemblage", although this grouping possibly not monophyletic. Two subspecies recognized.

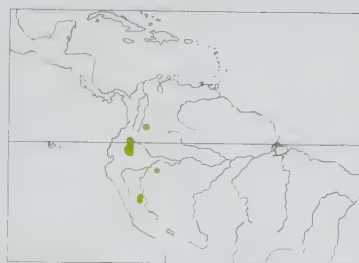
**Subspecies and Distribution.**

*M. s. sunensis* Chapman, 1925 - SC Colombia (E slope of Andes in Meta and Putumayo) and Ecuador (Sucumbios, Napo, Pastaza); specimen from "mouth of R Curaray" (Peru) may have originated from Ecuador.

*M. s. yessupi* Bond, 1950 - EC Peru (Huánuco, Pasco); also SW Amazonian Brazil (R Juruá but precise location uncertain, probably also R Javari).

**Descriptive notes.** 9 cm. Tail short. Male is grey, wings darker, throat and centre of upper breast black; concealed white interscapular patch, wing-coverts tipped white; underwing-coverts grey. Female is olive-brown above, browner on wings and tail, underparts dull buff, tinged rufous, sides, flanks and crissum tinged olive-brown. Subadult male is like female, but underparts greyer, throat and upper breast may start to show black. Race *yessupi* female is greyer above, less rufescent below. VOICE. Loudsong a series of 2-5 similar, evenly paced, somewhat long thin whistles (e.g. 4 notes, 1-5 seconds) at moderate pitch (c. 5 kHz), first note often slightly higher, intervals between notes shorter than notes. Call a thin, upslurred "wheet", slightly lower-pitched than loudsong, often in pairs.

**Habitat.** Understorey and mid-storey of lowland and foothill evergreen forest and adjacent older second-growth woodland; to 900 m, mostly at 200-500 m. Primarily, if not entirely, in *terra firme*



forest in Ecuador; recent records from E bank of R Javari (Brazil) were from *várzea*/transitional forest. Exact micro-habitat requirements not well understood, but seems to prefer areas in which understorey is dense and viny, with abundant *Heliconia*, and with abundance of suspended aerial leaf litter within 5 m of ground.

**Food and Feeding.** Not well known. Feeds on insects, probably also spiders. Forages in pairs, individually or in family groups, 1-7 m above ground (mostly 2.5-5 m), usually with mixed-species flocks of other insectivores, including (locally) up to 7 species of congener. Compared

with congeners, forages lethargically; hops and hitches along horizontal and inclined limbs, branches and twigs, gleans and reaches deliberately without hanging, sallying, fluttering or other acrobatic moves; sometimes clings momentarily to vertical stems and vines, and flicks wings and tail irregularly (somewhat less often than many congeners). Gleans from both live foliage and isolated, often small, dead leaves by stretching the legs, craning the neck and reaching for prey; not observed to hop directly on to dead leaves, and seldom pokes or probes them. Inspects dead-leaf clusters from the periphery, but does not rummage in these. Of 40 observed foraging manoeuvres in one study, majority were to dead leaves, but the birds did not manipulate the leaves with the bill or feet; species thus classed as a regular, non-specialist user of dead leaves.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Apparently patchily distributed and uncommon to rare throughout its range. Known to occur in a few large, protected areas, e.g. Yasuni and Sumaco-Galeras National Parks, in Ecuador, but more survey work is needed in order to permit a better assessment of the true distributional limits and status of this species.

**Bibliography.** Cadena, Álvarez *et al.* (2000), Hackett & Rosenberg (1990), Hilty & Brown (1986), Isler & Whitney (2002), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Sick (1993), Stotz (1990c), Stotz *et al.* (1996), Tallman & Tallman (1994), Whitney (1994a, 2003a), Zimmer, J.T. (1932b), Zimmer, K.J. (2003a).

## 86. Salvadori's Antwren

### *Myrmotherula minor*

**French:** Myrmidon de Salvadori

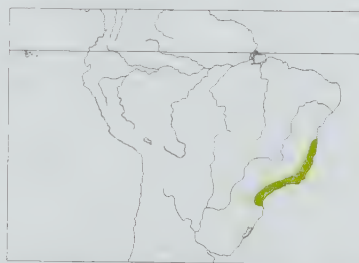
**Spanish:** Hormiguerito de Salvadori

**German:** Salvadoriameisenschlüpfer

**Taxonomy.** *Myrmotherula minor* Salvadori, 1864, Brazil.

Close relationship to *M. schisticolor* and *M. sunensis* suggested by similarities in morphology, behaviour and vocalizations. Often grouped with those and *M. axillaris*, *M. iheringi*, *M. fluminensis*, *M. behni*, *M. grisea*, *M. unicolor*, *M. snowi*, *M. longipennis*, *M. urosticta* and *M. menetriesii* as the "grey antwren assemblage", although this grouping possibly not monophyletic. Specimens from SW Amazonia tentatively assigned to this species by earlier authors, but identity of these requires substantiation, including further field studies and vocal and molecular analysis; may represent a distinct species. Monotypic.

**Distribution.** Coastal SE Brazil from SE Bahia S to extreme NE Santa Catarina; also old records from E Minas Gerais.



**Descriptive notes.** 9 cm; one female 6.4 g. Tail short. Male is grey, paler below, throat and centre of upper breast black; wing-coverts blackish, tipped white, tail with black subterminal band and white tip, crissum barred blackish. Female has crown and side of head grey, upperparts olive-brown, wings and tail dull rufous-brown, greater and median coverts thinly edged buff, tail edged russet; throat dingy white, underparts deep buff, deepest on flanks and crissum. Subadult male lacks black subterminal tailband. VOICE. Loudsong unusually complex for genus, 1-3 clusters of rapidly delivered, jumbled notes, descending in pitch

and lengthening, final emphatic notes upslurred, often introduced by sharp chips, duration 2-4 seconds (depending on number of clusters). Calls include variable (upslurred, downslurred, etc.) short whistles, given singly; also sharp chips, often in short series, or, in agonistic situations, widely spaced in longer series (over 20 notes) reminiscent of calls of some hummingbirds (Trochilidae).

**Habitat.** Understorey and mid-storey of lowland and foothill evergreen forest and mature secondary woodland; to 900 m, mostly below 500 m. Perhaps most common at base of foothills (often on steep slopes), typically in shaded forest interior, with moss-covered trees, abundant epiphytes, and usually in close proximity to running water. Second-growth woodland occupied apparently only when mature, shaded, and connected to extensive primary forest.

**Food and Feeding.** Little published. Feeds on insects, probably also spiders. Closely associated pair-members, individuals, or family groups forage 1-12 m (mostly 4-8 m) above ground; sometimes alone, but usually with mixed-species flocks that include Lesser Woodcreeper (*Lepidocolaptes fuscus*), Black-capped (*Philydor atricapillus*) and White-eyed Foliage-gleaners (*Automolus leucophthalmus*), *Dysithamnus stictothorax* and *D. mentalis*, *M. unicolor*, and Red-crowned Ant-tanager (*Habia rubica*). Forages mostly in leafy crowns and peripheral portions of understorey trees, particularly those with medium-sized to large leaves, seldom in small-leaved trees; also along rachides of tree-ferns, from which it inspects the curled leaflets; rarely in herbaceous vegetation. Hops or hitches rapidly along thin branches, frequently flicking the wings and tail, methodically scanning leaves and stems, perch-gleaning from top and bottom surfaces of leaves by reaching and by short lunging stabs; also regularly by hanging from tips of large leaves, often for 1-4 seconds, while craning the neck to scan foliage; also routinely scans while perched atop larger leaves. Sometimes performs short (less than 40 cm) upward-directed hover-gleans or makes longer (to 1.5 m) diagonal sallies to tops and bottoms of leaves; often flutters down to glean prey from near ends of larger leaves before dropping to new perch, or flutters down to pursue dislodged prey. Most prey captured from live foliage; also regularly scans and gleans from arboreal dead leaves, usually by hanging vertically from a perch above, sometimes by clinging acrobatically to leaf itself; dead leaves seldom manipulated, although individuals may occasionally bite down on a portion of a dead leaf, presumably to startle prey hiding inside. Occasionally probes moss-covered trunks and strands of hanging *Usnea*.



**Breeding.** Little known. In Espírito Santo (Augusto Ruschi Biological Reserve), adults watched in Oct as they repeatedly carried food into site c. 1.5 m above ground in dense understorey thicket inside tall forest, but nest not found; adults occasionally feeding begging juveniles in São Paulo (near Ubatuba) in Oct.

**Movements.** Presumed resident.

**Status and Conservation.** VULNERABLE. Restricted-range species: present in Atlantic Forest Lowlands EBA. Uncommon to rare, and entire population considered to be at risk owing to loss of habitat. Although a number of protected areas exist within the species' range, most do not contain sufficient forest habitat in the relevant elevational range (below 300 m). Protected areas in which the species is known to occur include Tinguá and Poço das Antas Biological Reserves, Serra da Bocaina National Park, and the 315,000-ha Serra do Mar State Park, which straddles border between states of Rio de Janeiro and São Paulo. Last-mentioned is regarded as the single most important reserve for both this species and *M. unicolor*, and is contiguous with the privately held Fazenda Capricornio, where both also occur; vigorous protection of the park is particularly important, as it contains one of the few extensive lowland forests that is directly linked to the mountain slopes, thus providing a complete elevational transect of the forested habitats of the Serra do Mar. Extension of other existing reserves to include more forest below 300 m would also greatly benefit this thamnophilid, as well as many other species. Fazenda União, a c. 3000-ha lowland forest near Rocha Leão, in N Rio de Janeiro, and owned by Rede Ferroviária Federal S.A. (RFFSA), contains populations of this species and of *M. unicolor* and *M. urosticta*; although access is restricted, it is not officially protected; incorporation of this important forest into the formal reserve system would greatly benefit all three of these globally threatened antwrens. Efforts to shore up the protection of privately owned forests known to harbour populations of the present species are also needed. More surveys are required to assess its precise distribution and population levels in S Paraná, where forested slopes of the S Serra do Mar extend down to meet intact forest in the coastal plain; this region would appear to have great conservation potential for both this species and *M. unicolor*.

**Bibliography.** Aleixo (1999), Collar & Andrew (1988), Collar *et al.* (1994), Cory & Hellmayr (1924), Dunning (1993), Hackett & Rosenberg (1990), Isler & Whitney (2002), Nakagaki *et al.* (2000), Parker (2003a), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993), Stattersfield & Capper (2000), Stotz *et al.* (1996), Whitney (2003a, 2003b), Whitney & Pacheco (1995, 1997, 2003), Zimmer, J.T. (1932b), Zimmer, K.J. (2003a).

## 87. Ihering's Antwren

### *Myrmotherula iheringi*

**French:** Myrmidon d'Ihering

**Spanish:** Hormiguerito de Ihering

**German:** Iheringameisenschlüpfer

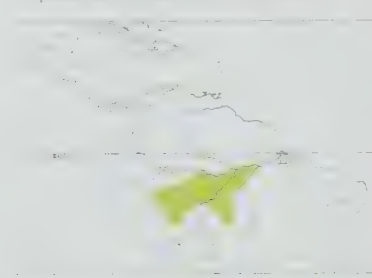
**Taxonomy.** *Myrmotherula iheringi* Snethlage, 1914, Boim, Pará, Brazil.

Relationships uncertain. Often grouped with *M. axillaris*, *M. schisticolor*, *M. sunensis*, *M. minor*, *M. fluminensis*, *M. behni*, *M. grisea*, *M. unicolor*, *M. snowi*, *M. longipennis*, *M. urosticta* and *M. menetriesii* as the "grey antwren assemblage", although this grouping possibly not monophyletic. Geographical distribution and diagnosability of races requires re-examination. Two subspecies recognized.

#### Subspecies and Distribution.

*M. i. heteroptera* Todd, 1927 - SW Amazonian Brazil (headwaters of R Juruá E to R Madeira), SE Peru (E Madre de Dios) and extreme NW Bolivia (W Pando).

*M. i. iheringi* Snethlage, 1914 - SC Amazonian Brazil (W bank of R Tapajós and along drainages of R Jiparaná and R Roosevelt S to Rondônia).



**Descriptive notes.** 8.5-9.5 cm; 7.5-9 g. Tail moderately short. Male is dark grey above, concealed white interscapular patch, black wing-coverts tipped white; throat, upper breast and centre of lower breast black (extent of black individually variable), rest of underparts grey, centre of belly whitish; underwing-coverts white. Female differs in being pale blue-grey above, throat whitish, underparts pale buff. Subadult male resembles female, but throat blotched black. Race *heteroptera* female has upperparts tinged ochraceous, wing-covert tips tinged buff. **VOICE.** Loudsong a countable series of intense, downslurred "peer"

notes, variably 6-30 (e.g. 24 notes, 13 seconds), notes and intervals essentially same length, pace and pitch nearly constant. Call a disyllabic "pe-weet", second syllable a sharp downslurred whistle; appears also to deliver second syllable on its own.

**Habitat.** Mid-storey and understorey of lowland evergreen forest (*terra firme* and transitional), to 400 m. Restricted to stands of *Guadua* bamboo in parts of range (e.g. SE Peru), but elsewhere inhabits mid-storey vine tangles, with or without bamboo. Appears to survive in disturbed areas with suitable micro-habitats.

**Food and Feeding.** Little published. Feeds on various insects, including orthopterans, stick-insects (Phasmatidae), and adult and larval Lepidoptera; probably also on spiders. Forages as closely associated pair-members, or individually, or in family groups, mostly 3-10 m above ground; mean foraging height in 44 observations in Peru (Cocha Cashu) was 5.1 m; 6.4 m in 63 observations in Brazil (Rondônia). Typically with mixed-species flocks of *Thamnomanes* antshrikes and other insectivores, but sometimes alone. Active forager, hitching from side to side, seldom pausing for more than 1 second between hops, often changing direction and retracing its route, while constantly flicking wings open and characteristically twitching tail rapidly from side to side. Frequently leans forward and cranes its head to peer under branches and leaves, gleaning prey from undersides of leaf petioles, vine stems, dead twigs, and leaves, by reaching or by acrobati-

cally clinging or hanging beneath stems, leaves or branches; sometimes makes short upward-directed sallies to hover-glean from underside of vegetation or branches. Where bamboo present, often gleans from its leaves, stems and nodes. Also regularly inspects and gleans from arboreal dead leaves, particularly of bamboo, but tends not to linger at these, nor does it manipulate them; in one study in Peru, dead leaves comprised 47% of foraging substrates in 219 observations; in 63 observations at a site in Rondônia (Brazil), where species not so closely tied to bamboo patches, only 27% of substrates were dead leaves, and 57% were twigs (mostly dead ones), stems and vines. Observations suggest that this species should be classed as a regular, non-specialist user of dead leaves.

**Breeding.** Almost nothing known. In Peru, copulation observed in Jul and juvenile found in Sept. Also record from Peru of nest-building on 3rd Oct, with single young fledged on 8th Nov; nest and eggs not described; male and female both incubated, shifts 4-5 hours; non-incubating partner joined mixed-species flock for foraging, even when more than 100 m from nest; later, when feeding nestlings, both parents foraged within 50 m of nest.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon and somewhat local throughout its range. Occurs in a few large, protected areas, notably Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, and Serra do Divisor and Tapajós National Parks, in Brazil. More surveys are needed in order better to assess the distribution and population status of this species in Brazil.

**Bibliography.** Alverson *et al.* (2000), Cory & Hellmayr (1924), Foster *et al.* (1994), Hackett & Rosenberg (1990), Isler & Whitney (2002), Johns (1991), Kratter (1997a), Munn (1984, 1985), Munn & Terborgh (1979), Naumburg (1930), Oren & Parker (1997), Parker (1982, 2003a), Remsen & Parker (1984), Ridgely & Tudor (1994), Rosenberg (1997, 2003), Servat (1996), Sick (1993), Stotz (1990b), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Zimmer (2003a).

## 88. Rio de Janeiro Antwren

### *Myrmotherula fluminensis*

**French:** Myrmidon de Rio de Janeiro

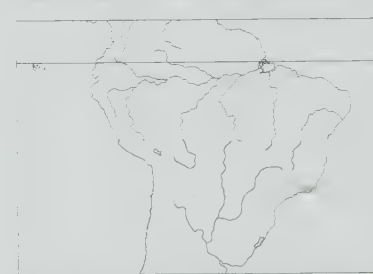
**Spanish:** Hormiguerito Carioca

**German:** Rio de Janeiro-Ameisenschlüpfer

**Taxonomy.** *Myrmotherula fluminensis* Gonzaga, 1988, Santo Aleixo, Rio de Janeiro, Brazil.

Taxonomic validity questioned by various authors; was initially thought by some to be a hybrid between *M. unicolor* and race *luctuosa* of *M. axillaris*, and later considered possibly a variant of latter; moreover, some uncertainty over whether recent observations refer to same taxon as original type specimen. More research, including thorough analysis of recent tape recordings, is needed in order to determine its true taxonomic status. All mentioned taxa are often grouped with *M. schisticolor*, *M. sunensis*, *M. minor*, *M. iheringi*, *M. behni*, *M. grisea*, *M. snowi*, *M. longipennis*, *M. urosticta* and *M. menetriesii* as the "grey antwren assemblage", although this grouping possibly not monophyletic. Monotypic.

**Distribution.** C Rio de Janeiro, in SE Brazil.



**Descriptive notes.** c. 10 cm; 9 g. Male is grey, wings darker, throat and breast down to central belly black; wing-coverts black, broadly tipped white; underwing-coverts white; whitish eyering and subocular stripe. Female undescribed. **VOICE.** Nothing known; recorded vocalizations purported to be of this species considered very similar, if not identical, to those of race *luctuosa* of *M. axillaris*.

**Habitat.** Little known. Single specimen was collected in a partially isolated and highly disturbed woodlot at c. 20 m elevation; subsequent reports from young secondary forest (up to 25 years old) adjacent to old clearings, at 35-200 m.

**Food and Feeding.** Almost nothing known. Stomach of sole specimen contained remains of arthropods. Mainly seen feeding in mixed-species flocks, usually within 2 m of ground.

**Breeding.** Nothing known.

**Movements.** Nothing known; specimen was obtained from a lowland site that had been studied for 7 years, prompting speculation that bird was a straggler or altitudinal migrant from slopes of nearby Serra dos Órgãos.

**Status and Conservation.** CRITICAL. Restricted-range species: present in Atlantic Forest Lowlands EBA. Known from a single specimen taken in lowland Rio de Janeiro state. Reported to have been rediscovered in 1994 at Guapi Açu (then Serra do Mar) Ecological Reserve, which encompasses 74 km<sup>2</sup> of privately owned land at altitudinal range of 35-2000 m; the Fazenda do Mar (20 km<sup>2</sup>) forms core of this reserve, and adjacent landowners are expected to sign buffer-zone management agreements. Recent tape recordings made at Guapi Açu, alleged to be of this species, have been judged by several experienced field ornithologists to be very similar, even identical, to vocalizations of *M. axillaris* of race *luctuosa*, leading to published speculation that the Guapi Açu birds represent a local variant of that taxon; thorough analysis of tape-recorded vocalizations of the Guapi Açu individuals is required in order to determine if they are diagnosably different from *luctuosa*. Additional research needed to establish if these birds represent the same taxon as the type specimen. Further, the need for surveys aimed at locating any additional sites for this antwren and obtaining information on its ecology and conservation requirements is paramount. If it is, in fact, a forest bird, then habitat loss in this highly deforested region of Brazil is likely to be the most critical conservation issue.

**Bibliography.** Anon. (1997b), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Gonzaga (1988), Ridgely & Tudor (1994), Sick (1993), Stattersfield & Capper (2000), Teixeira (1997).









PLATE 53

inches 2  
cm 5



## 89. Plain-winged Antwren

### *Myrmotherula behni*

**French:** Myrmidon de Behn

**Spanish:** Hormiguerito de Behn

**German:** Graufügel-Ameisenschlüpfer

**Other common names:** Pale-winged Antwren

**Taxonomy.** *Myrmotherula behni* Berlepsch and Leverkühn, 1890, "Bogotá" trade skin, Colombia. Appears to be closely related to *M. grisea* on basis of habitat and vocalizations, also to *M. unicolor* and *M. snowi* of Brazilian Atlantic Forest, the four together termed the "Plain-winged *Myrmotherula* group". They are often grouped with *M. axillaris*, *M. schisticolor*, *M. sunensis*, *M. minor*, *M. iheringi*, *M. fluminensis*, *M. longipennis*, *M. urosticta* and *M. menetriesii* as the "grey antwren assemblage", although this grouping possibly not monophyletic. Four subspecies recognized.

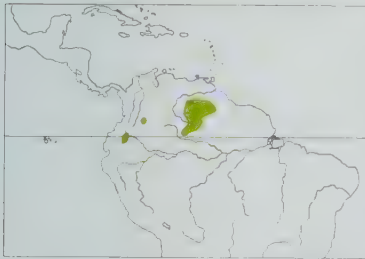
#### Subspecies and Distribution.

*M. b. yavii* J. T. Zimmer & Phelps, Sr., 1948 - S Venezuela (NW Bolívar, Amazonas except Cerro Camani) and adjacent Brazil (extreme N Amazonas).

*M. b. camanii* Phelps, Sr. & Phelps, Jr., 1952 - Cerro Camani, in N Amazonas (Venezuela).

*M. b. inornata* P. L. Slater, 1890 - SE Bolívar and adjacent Brazil (extreme N Roraima); observations from the Guianas require confirmation.

*M. b. behni* Berlepsch & Leverkühn, 1890 - E Andean slope in SC Colombia (locally in Meta and Nariño) and E Ecuador (locally in Sucumbios, Napo and Pastaza).



**Descriptive notes.** 9.5 cm; 1 female 7.9 g. Male nominate race is grey, darker on wings; chin to centre of throat and upper breast black; underwing-coverts grey. Female has crown and upperparts olivaceous brown, tail slightly dusker, throat whitish, underparts drab olive-buff. Race *yavii* male is darker, female rear underparts dark olive-buff, darkest on flanks; *camanii* is paler than previous, female underparts less brown-looking; *inornata* is larger, male darker with more extensive black throat patch, female upperparts rufescent brown, rear underparts olivaceous brown. **VOICE.** Known only from Ecuador. Loudsong a series of simple, slightly downslurred notes on approximately same pitch (c. 4 kHz), notes longer than intervals (e.g. 9 notes, 4.5 seconds). Calls include sharp "wheet" and variably downslurred or upslurred squeals; calls sometimes repeated in pairs.

**Habitat.** Understorey and mid-storey of montane and foothill evergreen forest; 800-1600 m in Colombia and Ecuador, most common at c. 1000 m in Ecuador; 1000-1850 m in Venezuela and adjacent Brazil, most common at 1800-1850 m on Cerro de la Neblina. Observations from Ecuador suggest that species favours damp ravines with patches of bamboo (*Guadua*) in undisturbed forest.

**Food and Feeding.** Not well known; all information from Ecuador. Feeds on small insects, probably also spiders. Forages in pairs, individually, or in family groups, almost always with mixed flocks of other insectivores, including (locally) up to 5 congeneric species. In areas of forest with dense, interlocking understorey, seems to forage mostly 1-3 m above ground; in more open understorey tends to feed higher, 4-10 m. Forages actively, hopping and hitching along slender limbs, peering at undersides of leaves; frequently hangs aerobatically sideways or upside-down at tips or margins of leaves, often maintaining hanging position for several seconds while craning the neck to scan foliage. Prey gleaned by reaching, hanging, and short lunging stabs; occasionally by short flutter-chases. About 50% of all foraging manoeuvres directed at arboreal dead leaves, both single ones and small clusters; proportion of dead-leaf searching higher when foraging low in understorey than when in mid-storey; does not seem to manipulate dead leaves, so probably best classed as a regular, non-specialist user of dead leaves.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Rare and patchily distributed throughout its range. Reported sight records of race *inornata* from near sea-level in Guyana, Surinam and French Guiana require substantiation; species normally occurs at much higher elevations. Most recent records from Ecuador have been from Volcán Sumaco region, part of which is protected by the Sumaco-Galerías National Park. The species is also known from a number of tepuis in Venezuela, several of which fall within the boundaries of various parks and reserves (e.g. Alto Orinoco-Casiquiare Biosphere Reserve, and Canaima, La Neblina, Duida and Jaau-Sarisariñama National Parks), and all of which have been recently declared national monuments. More survey work is needed in order better to elucidate the distribution, ecology and conservation needs of this poorly known species.

**Bibliography.** Barnett *et al.* (2002), Cory & Hellmayr (1924), Hackett & Rosenberg (1990), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Sick (1993), Stotz *et al.* (1996), Whitney (1994a, 2003a), Whitney & Pacheco (1997), Willard *et al.* (1991).

## 90. Yungas Antwren

### *Myrmotherula grisea*

**French:** Myrmidon cendré

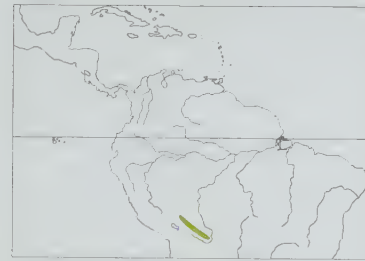
**Spanish:** Hormiguerito Ceniciento

**German:** Yungasameisenschlüpfer

**Other common names:** Ashy Antwren

**Taxonomy.** *Myrmotherula grisea* Carriker, 1935, Santa Anna, 2200 feet [670 m], La Paz, Bolivia. Appears to be closely related to *M. behni* on basis of habitat and vocalizations, also to *M. unicolor* and *M. snowi* of Brazilian Atlantic Forest, the four together termed the "Plain-winged *Myrmotherula* group". They are often grouped with *M. axillaris*, *M. schisticolor*, *M. sunensis*, *M. minor*, *M. iheringi*, *M. fluminensis*, *M. longipennis*, *M. urosticta* and *M. menetriesii* as the "grey antwren assemblage", although this grouping possibly not monophyletic. Monotypic.

**Distribution.** NE base of Andes in W Bolivia (La Paz, Cochabamba, W Santa Cruz).



**Descriptive notes.** 8.5-9.5 cm; 8-10 g. Male is uniform grey, except wings and tail darker, more brownish-grey; underwing-coverts light grey. Female is olive-brown above, crown to upper mantle tinged greyish, uppertail-coverts tipped yellowish-brown, tail dark brown, edged rufous-brown; side of head, chin and throat brownish-yellow, palest on chin, underparts yellow-ochre, browner on flanks and crissum; underwing-coverts pale buff. Subadult male differs from adult only in having patches of yellowish-brown. **VOICE.** Loudsong a series of simple, slightly downslurred notes on approximately same pitch (c. 4 kHz), delivered rapidly, notes much longer than intervals (e.g. 8 notes, 2-4 seconds); may sometimes be introduced by nasal calls (unconfirmed). Calls include sharp, upslurred "wheet" and upslurred doubled-noted "do-leep"; possibly also longer, flatter, raspy notes in groups of 2-4 (confirmation again required).

**Habitat.** Mid-storey and subcanopy of foothill evergreen forest and montane evergreen forest, also understorey at forest edge; at 500-1650 m. Probably most numerous in a narrow altitudinal band (c. 700-1200 m) above elevational limits of most congeners.

**Food and Feeding.** Little known. Feeds on various insects, including orthopterans and cockroaches (Blattidae), also spiders; adults seen carrying green orthopterans 2 cm long in bill. Forages in pairs, individually, or in family groups, 1-15 m above ground; observed both in mid-storey and lower canopy (mostly at 8-14 m) and in understorey (1-5 m up) at a stream edge. Very active and acrobatic; flicks wings constantly and tail occasionally. Appears primarily to search clusters of dead leaves hanging from open, slender branches or trapped in vine tangles; occasionally probes balls of moss on branches. Also observed to scan both sides of green leaves without taking prey. Recorded in mid-storey with mixed flocks of insectivores including Olivaceous Woodcreeper (*Sittasomus griseicapillus*), Tawny-crowned Greenlets (*Hylophilus ochraceiceps*), Golden-crowned Warblers (*Basileuterus culicivorus*), Guira Tanager (*Hemithraupis guira*), Red-crowned Ant-tanagers (*Habia rubica*) and Magpie Tanager (*Cissopis leveriana*); in understorey with flocks that included Ochre-cheeked Spinetail (*Poecilurus scutatus*), *Thamnomphilus aroyae*, *Dysithamnus mentalis* and Saffron-billed Sparrow (*Arremon flaviviridis*). At lower elevations associates with *M. axillaris* and *M. menetriesii*.

**Breeding.** Nothing known. Two paired individuals seen carrying orthopterans 2 m above ground in open undergrowth on 17th Aug, but no nest or young located.

**Movements.** Presumed resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species; present in Bolivian and Peruvian Lower Yungas EBA. Known from a small number of localities and a narrow elevational range within small geographical area, in which it is considered uncommon. The foothill yungas forests occupied by this species are drier than forests farther upslope, and therefore more easily cleared for colonization projects. Expanding cultivation of coffee and coca at same elevations provides further significant threat to the continued survival of this and other threatened species in the region. At present, only major protected area in which this thamnomphilid occurs is Ambaró National Park, in Santa Cruz; continued protection of the park, as well as creation of more yungas reserves, is urgently needed.

**Bibliography.** Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Gonzaga & Pacheco (1990), Hackett & Rosenberg (1990), Herzog (2003), Isler & Whitney (2002), Parker *et al.* (1992), Perry *et al.* (1997), Rensen (2003b), Rensen *et al.* (1982), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stotz *et al.* (1996), Whitney & Pacheco (1997).

## 91. Unicoloured Antwren

### *Myrmotherula unicolor*

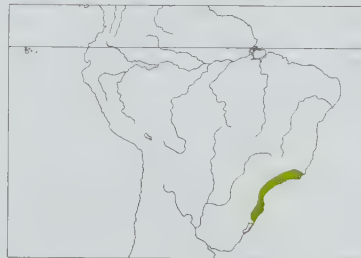
**French:** Myrmidon unicolore

**Spanish:** Hormiguerito Unicolor

**German:** Südlicher Einfarbameisenschlüpfer

**Taxonomy.** *Myrmothera unicolor* Ménétries, 1835, no locality = Rio de Janeiro, Brazil. Forms a superspecies with *M. snowi* and formerly treated as conspecific; also appears to be closely related to Andean *M. behni* and *M. grisea*. The four have together been termed the "Plain-winged *Myrmotherula* group"; this often combined with *M. axillaris*, *M. schisticolor*, *M. sunensis*, *M. minor*, *M. iheringi*, *M. fluminensis*, *M. longipennis*, *M. urosticta* and *M. menetriesii* as the "grey antwren assemblage", although this grouping possibly not monophyletic. Monotypic.

**Distribution.** SE Brazil (N Rio de Janeiro S to N Rio Grande do Sul).



**Descriptive notes.** 9-10 cm; 6.5-8.5 g. Male is grey, paler below; base of throat feathers black, tips grey. Female is olive-brown above, slightly greyer on crown and nape, uppertail-coverts yellowish-brown; wings dark greyish-brown, edged reddish yellow-brown, tail reddish yellow-brown; throat whitish, underparts mostly olive-buff, greyer on sides and flanks, crissum brownish-yellow. **VOICE.** Loudsong a series of simple, slightly downslurred notes on approximately same pitch (c. 4 kHz), notes longer than intervals (e.g. 9 notes, 4.5 seconds), song sometimes introduced by shorter nasal notes. Calls include sharp

"wheet", paired nasal notes, also longer, flat, raspy notes, sometimes in groups of 3-6.

**Habitat.** Understorey and mid-storey of lowland evergreen forest and mature second-growth woodland; locally (coastal São Paulo, Paraná and Santa Catarina) also in *restinga* woodland on white-sand soils; from sea-level to c. 500 m. Most common in somewhat stunted forest (canopy height 7-20 m) having dense, non-herbaceous understorey with abundance of thin trunks, vines and suspended dead leaves, often growing on sandy soils.

**Food and Feeding.** Little published. Feeds on small insects, including orthopterans (Tettigoniidae) and lepidopteran adults (moths) and larvae, also spiders. Closely associated pair-members, indi-



viduals, or family groups often forage alone, but more often with mixed-species flocks that include Lesser Woodcreeper (*Lepidocolaptes fuscus*), Plain Xenops (*Xenops minutus*), Black-capped (*Philydor atricapillus*) and White-eyed Foliage-gleaners (*Automolus leucophthalmus*), *Dysithamnus stictothorax* and *D. mentalis*, *Drymophila squamata* and Red-crowned Ant-tanager (*Habia rubica*); occurs locally in same flocks as *M. minor*. Foraging heights range from 0.5 m to 15 m; mostly 0.5–5 m in *restingas* woodland, but seldom below 3 m inside tall forest except at edges, where it may descend to near ground level. Moves actively but rather deliberately through trees, shrubs and (especially) vine tangles by hops and short flights, often pausing for 1–2 seconds to scan, and frequently flicking wings and tail; seldom changes course within a single tree, more often works in sustained direction, either hitching from low to high along vertical vines and branches or, when foraging along horizontal limbs, usually working from near the trunk outwards, constantly leaning to peer under leaves. Perch-gleans from top and bottom surfaces of live leaves, vines, stems and branches by reaches and short, lunging stabs; less frequently by hanging, or by short (usually 10–30 cm, rarely to 1 m) sallies or hover-gleans. Especially given to foraging in vine tangles and large philodendron (*Philodendron*) leaves along trunks, gleaning from petioles and vines. Also scans and gleans prey from arboreal dead leaves, usually by reaching from nearby perch with legs extended and neck craned, probing the curls lightly with the bill; less frequently clings to leaf itself. Extent of dead-leaf searching seemingly varies greatly among individuals, typically comprising 25–75% of total number of substrates used.

**Breeding.** Three nests found in Nov in São Paulo; juvenile-plumaged males seen in close company of adults in late Oct in Santa Catarina. Nest a cup, maximum dimensions 8.0 × 6.5 cm, height to 6.5 cm, constructed from roots, dead leaves and *Marasmius* filaments, also lined with *Marasmius*, with dead leaves hung on outside of structure, placed 0.82–2.08 m above ground in horizontal fork of shrub. Eggs in São Paulo white with wine-coloured spots and vermiculations, others variously described as having pale rusty-brown or darker purplish red-brown lines and scribbles and closely packed flecks; at approach of an observer, a male flew from a nest to the ground and fluttered its wings.

**Movements.** Presumed resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Atlantic Forest Lowlands EBA. Uncommon, and entire population considered to be at risk owing to loss of habitat. Although there are a number of formally protected areas within N part of its range (Rio de Janeiro and São Paulo), most do not contain sufficient forest habitat in appropriate elevational range (below 300 m). Protected areas in which the species is known to occur include Tinguá and Poço das Antas Biological Reserves, the lower reaches of Serra dos Órgãos National Park, Serra da Bocaina National Park, Ilha do Cardoso State Park, and the 315,000-ha Serra do Mar State Park. The last, which straddles border between states of Rio de Janeiro and São Paulo, is regarded as the single most important reserve for both this species and *M. minor*, and is contiguous with privately held Fazenda Capricornio, where both also occur; vigorous protection of Serra do Mar State Park is particularly important, as it contains one of the few extensive lowland forests directly linked to the mountain slopes, thus providing a complete elevational transect of forested habitats of the Serra do Mar. Extension of other existing reserves to include more forest below 300 m would also greatly benefit this and many other species. Fazenda União, a c. 3000-ha lowland forest near Rocha Leão, in N Rio de Janeiro, and owned by Rede Ferroviária Federal S.A. (RFFSA), contains populations of this antwren and also of *M. minor* and *M. urosticta*; this forest is not officially protected, but access is restricted; incorporation of this important forest into the formal reserve system would greatly assist the conservation of all three of these globally threatened antwrens. More survey work is needed in order to assess the distribution and population levels of present species in S portions of its range, particularly in the *S restingas* of Paraná and Santa Catarina, and in border region between the two states where forested slopes of S Serra do Mar are linked with intact lowland forest in the coastal plain. This region would seem to have great conservation importance, as evidenced by population levels of this species in the Volta Velha Reserve, at Itapoia (Santa Catarina); here, in Oct–Nov 2001, pairs or family groups were present in every understorey mixed flock and species was judged as fairly common.

**Bibliography.** Aleixo (1999), Belton (1985), Bencke & Kindel (1999), Buzzetti (2003b), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Cory & Hellmayr (1924), Hackett & Rosenberg (1990), Isler & Whitney (2002), Naka *et al.* (2000), Parker (2003a), Ridgely & Tudor (1994), do Rosário (1996), Schönwetter & Meise (1967), Scott & Brooke (1985), Sick (1993, 1997), Stattersfield & Capper (2000), Stotz *et al.* (1996), Teixeira & Gonzaga (1985), Whitney & Pacheco (1995, 1997), Zimmer (2003a).

## 92. Alagoas Antwren

### *Myrmotherula snowi*

**French:** Myrmidon de Snow

**German:** Nördlicher Einfarbameisenschlüpfer

**Spanish:** Hormiguerito de Alagoas

**Taxonomy.** *Myrmotherula unicolor snowi* Teixeira and Gonzaga, 1985, Pedra Branca, Alagoas, Brazil. Forms a superspecies with *M. unicolor* and formerly treated as conspecific; also appears to be closely related to Andean *M. behni* and *M. grisea*. The four have together been termed the “Plain-winged *Myrmotherula* group”; this often combined with *M. axillaris*, *M. schisticolor*, *M. sunensis*, *M. minor*, *M. iheringi*, *M. fluminensis*, *M. longipennis*, *M. urosticta* and *M. menetriesii* as the “grey antwren assemblage”, although this grouping possibly not monophyletic. Monotypic.

**Distribution.** Alagoas, in NE Brazil: known only from type locality, above Muriç.

**Descriptive notes.** 10–10.5 cm; three birds 8–11.5 g. Male is grey, paler below; base of throat feathers black, tips grey. Differs from *M. unicolor* in longer, wider and deeper bill, longer wing, shorter tail. Female is mostly rufous-brown, darker on wing-coverts, with cheeks and throat paler; differs from *M. unicolor* in distinct rufescent tinge all over. **Voice.** Loudsong a series of simple downslurred notes of about even pitch (ca. 3–6 kHz), somewhat similar to that of *M. unicolor* but notes lower, more downslurred, and more often given in shorter groups of 3–6 notes (e.g. 4 notes, 4 seconds). Call a short “wheet”, also

longer, flat, nasal squealing notes in groups of 2–5, most often in triplets, notes descend in pitch. **Habitat.** Understorey of semi-humid upland forest, at c. 550 m.

**Food and Feeding.** Not well known. Feeds on insects, including orthopterans (Tettigoniidae) and lepidopteran larvae (greenish and whitish caterpillars); also on spiders. Stomach contents contained spiders, beetles (Coleoptera), cockroaches (Blattidae) and ants. Closely associated pair-members, individuals, or family groups forage 1.5–5 m above ground (mostly 5–8 m), sometimes alone, but usually with mixed-species flocks of insectivores, including Lesser Woodcreeper (*Lepidocolaptes*

*fuscus*), Plain Xenops (*Xenops minutus*), White-eyed Foliage-gleaner (*Automolus leucophthalmus*), *Thamnomanes caesi* and *Myrmotherula axillaris* (race *luctuosa*). Forages actively through vegetation with short hops and flights, hitching from side to side, frequently changing direction, seldom pausing for more than 3 seconds in one spot, and regularly flicking the wings and pumping tail downwards. Searches both live and dead foliage, gleaning prey from tops and bottoms of live leaves by reaches and short, lunging stabs; also hangs acrobatically by feet from leaf margins and tips; probes curled dead leaves with its bill, but does not otherwise manipulate them.

**Breeding.** Little known. Female with egg in oviduct on 9th Feb, and juveniles still in company of presumed parents recorded in May.

**Movements.** Presumed resident.

**Status and Conservation.** **CRITICAL.** Restricted-range species: present in Atlantic Slope of Alagoas and Pernambuco EBA. Known only from the Muriç Ecological Reserve (3000 ha), where it is uncommon. Surveys of the few remaining ridgetop forests in the region are urgently required in order to locate any additional populations of this species. Even more important is the urgent need for adequate protection of the reserve, which was still subject to illegal timber extraction in Jan 2002. This reserve is a critical reservoir of endemic biodiversity, from which four species of passerine have been described as new to science since 1983.

**Bibliography.** Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Isler & Whitney (2002), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Teixeira & Gonzaga (1985), Wege & Long (1995), Whitney & Pacheco (1995, 1997), Zimmer (2003a).

## 93. Long-winged Antwren

### *Myrmotherula longipennis*

**French:** Myrmidon longipenne

**Spanish:** Hormiguerito Alilargo

**German:** Silberameisenschlüpfer

**Other common names:** Garbe's Antwren (*garbei*)

**Taxonomy.** *Myrmotherula longipennis* Pelzelin, 1868, Marabitanas, Rio Negro, Amazonas, Brazil. Forms a superspecies with *M. urosticta*; other relationships uncertain, but appears closely related to *M. menetriesii*. The three are often grouped with *M. axillaris*, *M. schisticolor*, *M. sunensis*, *M. minor*, *M. iheringi*, *M. fluminensis*, *M. behni*, *M. grisea*, *M. unicolor* and *M. snowi* as the “grey antwren assemblage”, although this grouping possibly not monophyletic. Plumage and vocal differences suggest that some races may be separate species; taxa in need of re-examination; geographical ranges of races tentative, based mainly on previously published statements. Six subspecies recognized.

**Subspecies and Distribution.**

*M. l. longipennis* Pelzelin, 1868 - S Venezuela (Bolívar, Amazonas), the Guianas, N Amazonian Brazil (E to Amapá), SE Colombia, extreme NE Ecuador (N of R Napo) and extreme N Peru (Loreto N of R Napo and R Amazon).

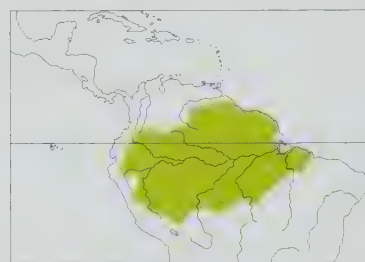
*M. l. zimmeri* Chapman, 1925 - E Ecuador (S of R Napo) and NE Peru (S of R Napo, N of R Amazon and R Marañón).

*M. l. garbei* H. von Ihering, 1905 - E Peru (S of R Amazon & R Marañón), SW Amazonian Brazil (E to R Madeira) and NW Bolivia (Pando, La Paz).

*M. l. ochrogyna* Todd, 1927 - lower R Madeira E to R Tapajós.

*M. l. paraensis* (Todd, 1920) - from R Tapajós E to W Maranhão, S to NE Mato Grosso.

*M. l. transitiva* Hellmayr, 1929 - SC Brazil (Rondônia, SW Mato Grosso).



**Descriptive notes.** 9–10.5 cm; 8–10 g. Male nominate race is dark grey, paler below, concealed white interscapular patch; wing-coverts black, tipped white, scapulars and tail tips narrowly edged white, throat and upper breast black, underwing-coverts light grey. Female is olive-brown above, wings and tail dark greyish-brown, flight-feathers and wing-coverts edged deep cinnamon; head side ochraceous buff, throat and breast light buff, lower underparts white, tinged grey, flanks olive-tinged light grey. Subadult male (possibly first-year) is like female, but posterior underparts light grey. Races differ from nominate in male having

white-tipped feathers on head side, black extending farther down breast, slightly paler underparts, female more variably different: *zimmeri* female has crown and upperparts olive-tinged grey, tail dark grey, flight-feather edges cinnamon-tinged white, contrasting pale cinnamon tips of wing-coverts, head side pinkish-buff, deep cinnamon below; *garbei* male has slightly paler rear underparts, female resembles previous but more olivaceous above, wing-covert tips olive-buff, head side paler, warm buff below; *ochrogyna* male has lower underparts slightly darker than previous, female crown and upperparts rufous-brown, tail brown, head side buff-brown, ochraceous below; *paraensis* male has pale grey rear underparts often tipped white, female is brownish-olive above and on wing and tail edgings, head side cinnamon-buff, bright cinnamon-buff below, immature like female but greyer above and grey lower underparts (first-year?), or like male but throat white with indistinct black spots (second-year?); *transitiva* is somewhat darker ventrally than previous, female is similar but more rufescent above, head side paler, light buff below, deepest on breast, shaded brownish on flanks. **Voice.** Loudsong nominate race a series of harsh upslurred notes (e.g. 10 notes, 5–5 seconds), initially gains in intensity but nearly constant in pitch and pace; *garbei* a deliberate series (e.g. 5 notes, 3 seconds), each note dropping and then rising in pitch, sounding like “cheery”, while entire series rises in pitch, song sometimes introduced by harsh downslurred notes; *zimmeri* most resembles previous; *paraensis* a rapidly delivered series of abrupt downslurred notes that shorten slightly in length, mostly on same pitch except last notes rise (e.g. 9 notes, 2.6 seconds); *transitiva* most resembles previous, as also do notes of *ochrogyna* (but pitch rising and pace faster in latter, more like *garbei*). Common call consists of 2–6 whistles, dropping in pitch, the number and length of notes variable among races and individuals; also variety of shorter notes.

**Habitat.** Understorey and mid-storey of lowland and foothill evergreen forest, primarily *terra firme*, but also transitional and *várzea*/igapó, mostly below 700 m; to 900 m in Andes, to 1100 m in tepuis of Venezuela. Most common in relatively open, shaded understorey of tall *terra firme* forest.

**Food and Feeding.** Feeds on variety of insects and spiders. Stomach samples from Surinam contained lepidopteran larvae, beetles (Chrysomelidae), ants (Myrmicinae), orthopterans (Acrididae), spiders. Analysis of stomach contents of 12 birds from Peru/Bolivia revealed that commonest prey were katydids (Tettigoniidae) and crickets (Gryllidae), followed in order by larvae, beetles (virtually all less than 10 mm), spiders, cockroaches (Blattidae) and heteropterans, and ants/flies/wasps; in same extensive study, comparisons of prey taken in the field with prey availability showed that orthopterans, beetles and larvae were selected more than expected, and many fewer ants, flies and



wasps taken than would be predicted on basis solely of availability; in the same prey-selectivity experiment, but using birds in outdoor cages, cockroaches, spiders, crickets, katydids smaller than 25 mm, some grasshoppers, butterflies (Lepidoptera) and dragonflies (Odonata) were readily captured and consumed, but harvestmen (Opiliones), nearly all ants, flies and wasps, most beetles and heteropterans, and katydids larger than 25 mm were ignored or rejected. Closely associated pair-members, individuals, or family groups forage mostly 2-8 m above ground, sometimes lower, and rarely to 14 m; mean foraging height from 90 observations in Peru (Cocha Cashu) was 4.6 m; means in Brazil 5.6 m from 175 observations in Rondônia and 6.2 m from 162 observations near Manaus. Sometimes alone, but usually with mixed flocks of other insectivores, including *Thamnomanes* antshrikes, other antwrens, woodcreepers (Dendrocolaptidae), foliage-gleaners (Furnariidae), Tawny-crowned Greenlet (*Hylophilus ochraceiceps*) and Red-crowned Ant-tanager (*Habia rubica*). Forages mostly along slender, relatively open branches of understorey trees, particularly those with medium-sized to large leaves, usually starting in centre of tree and then working outwards, hitching from side to side along lateral branches while scanning live leaves and stems, and frequently leaning forward to peer under leaves and branches; continually flicks wings and wags tail slowly from side to side. Mostly perch-gleans prey from live leaves, stems, petioles and branches, either by reaching or by short, lunging stabs; sometimes hangs head first from tips of larger leaves to glean prey below. Frequently makes short, upward-directed sallies to hover-glean from underside of overhanging vegetation, sometimes fluttering back up to glean multiple times from same spot; this technique often used to extract lepidopteran larvae or eggs from inside silk casings, also at large leaves with visible insect damage (perhaps signalling an infestation). Regularly scans arboreal dead leaves, but more frequently ignores them. Where occurring in same flocks as *M. axillaris*, spends less time in vine tangles and dense foliage, and sallies and hover-gleans much more than that species.

**Breeding.** Nests found in Aug (2) and Dec (1) in French Guiana and in Aug-Nov in SE Peru (4). In French Guiana, nest built mainly by female, a deep cup (4.2 cm internal, 8 cm external) constructed mostly of fungal (*Marasmius*) fibres, covered with dead leaves, one 12 m above ground in tree covered with lianas and epiphytes, another 6 m above ground; in Peru, an open cup placed 2-6 m up in fork of leafy sapling. Both sexes feed chicks, bringing insects (including cockroach) and spiders from distances 30-40 m from nest, rather than farther away while accompanying mixed flocks.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Considered to be fairly common throughout most of its range. Extensive range includes a number of large, protected areas, such as Alto Orinoco-Casiquiare Biosphere Reserve, Yapacana and La Neblina National Parks, in Venezuela, Brownsberg Nature Park and Raleigh Falls-Voltzberg National Park, in Surinam, Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, and Serra do Divisor, Jau and Tapajós National Parks, Cristalino State Park and Caxiuanã National Forest, in Brazil. In addition, there are vast areas of contiguous appropriate habitat which are not formally protected, but which appear to be under relatively little threat of development in immediate future.

**Bibliography.** Alverson, Moskovits & Shopland (2000), Alverson, Rodriguez & Moskovits (2001), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Dick *et al.* (1984), Foster *et al.* (1994), Gonzaga (2001), Hackett & Rosenberg (1990), Haverschmidt & Mees (1994), Hellmayr (1929b), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Johns (1991), Mason (1996), Meyer de Schauensee & Phelps (1978), Munn (1985), Munn & Terborgh (1979), Novaes (1969, 1970, 1980), Oren & Parker (1997), Parker (2003a), Parker & Bailey (1991), Parker & Remsen (1987), Powell (1989), Remsen (1986), Reynaud (1998), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Rosenberg (1993, 2003), Servat (1996), Sick (1993), Stotz (1990b), Stotz & Bierregaard (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Tallman & Tallman (1994), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1988a, 1994), Tostain (2003), Tostain *et al.* (1992), Valente (2000), Whitney & Pacheco (1997), Wiley (1980), Willard *et al.* (1991), Willis (1977, 1984a), Zimmer, J.T. (1932b), Zimmer, K.J. (2003a).

## 94. Band-tailed Antwren

### *Myrmotherula urosticta*

**French:** Myrmidon à queue blanche

**Spanish:** Hormiguerito Atlántico

**German:** Schwarzbinden-Ameisenschlüpfer

**Taxonomy.** *Formicivora urosticta* P. L. Selater, 1857, eastern Brazil.

Forms a superspecies with *M. longipennis*; other relationships uncertain. The two are often grouped with *M. axillaris*, *M. schisticolor*, *M. sunensis*, *M. minor*, *M. iheringi*, *M. fluminensis*, *M. behni*, *M. grisea*, *M. unicolor*, *M. snowi* and *M. menetriesii* as the "grey antwren assemblage", although this grouping possibly not monophyletic. Monotypic.

**Distribution.** Coastal E Brazil from C Bahia S to N Rio de Janeiro.



three notes, series dropping in pitch.

**Habitat.** Understorey and mid-storey of lowland evergreen forest, to c. 500 m. Seemingly more common in taller forest growing on sandy soils and with seasonal distribution of rainfall; within these, appears to prefer areas with abundance of vines in understorey and mid-storey.

**Food and Feeding.** Little published. Feeds on insects, probably also spiders. Closely associated pair-members, individuals, or family groups forage mostly 3-10 m above ground, rarely to 20 m; mean foraging height from 119 observations at Espirito Santo site was 4.9 m. Sometimes alone, but typically with mixed-species flocks of other insectivores that usually include *Thamnomanes caesi* and virtually always include *Myrmotherula axillaris* (race *luctuosa*). Forages mostly in more open, leafy branches with moderate foliage density. When moving to a new tree, usually flies to centre and then slides out along horizontal limbs, hitching sideways with the body perpendicular to the limb and making several short hops without changing its orientation; alternatively, hitches from side to side up vertical vines and inclined limbs until reaching crown, then flies down to mid-level of another tree. Active forager, scanning foliage as it goes, frequently flicking its wings. Perch-

**Descriptive notes.** 9-10 cm. Male is grey, paler below, concealed white interscapular patch; tail darker with white band at tip, wing-coverts black, tipped white, throat and upper breast black, underwing-coverts light grey. Female differs from male in paler grey head and upperparts, wing-coverts grey (not black), throat white, pale cinnamon-buff below, sides and flanks grey. Voice. Loudsong a deliberate series (e.g. 8 notes, 5.8 seconds) resembling that of race *garbei* of *M. longipennis*, except individual notes raspier and rise and fall more evenly, and pitch of entire song does not rise so much. Calls also similar; common call of

gleaning from tops of live leaves by far the most common attack manoeuvre; also regularly hangs with legs and neck extended to glean prey from tops of leaves. Less frequently, reaches upwards or makes short fluttering hover-gleans to take prey from undersides of leaves, or makes diagonal sallies of up to 1.5 m to both tops and bottoms of leaves; sometimes spots prey from a distance, then sallies to a perch adjacent to prey and captures it with a short, lunging stab (sally-pounce); also sometimes dislodges prey (usually orthopterans), then suddenly flutters downwards in rapid pursuit. Occasionally reaches out, up or down to probe lightly into curled dead leaves, but this behaviour relatively rare.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** ENDANGERED. Restricted-range species; present in Atlantic Forest Lowlands EBA. Uncommon and local, with patchy distribution, within its very small range. Currently known primarily from five protected areas in S Bahia totalling c. 43,000 ha (Monte Pascoal National Park, Una Biological Reserve, Porto Seguro Forest Reserves, and CPEC Gregorio Bondar Reserve), and from Sooretama Biological Reserve and the Linhares Natural Reserve (together totalling c. 46,000 ha) in N Espírito Santo. Significant portions of these reserves encompass habitat not suitable for this species, for which the effective protected area is therefore much smaller than it may seem. Has also been found at Fazenda União, a c. 3000-ha lowland forest located near Rocha Leão, in N Rio de Janeiro, and owned by Rede Ferroviária Federal S.A. (RFFSA). Although access is restricted, this forest is not officially protected; incorporation of this important forest into the formal reserve system would provide an important protected area for the species at the S end of its range. Surveys to locate additional, unprotected lowland-forest sites with remaining populations of this thamnophilid, followed by acquisition and protection of such lands, are greatly needed, as is continued protection of the integrity of existing reserves.

**Bibliography.** Collar *et al.* (1994), Cory & Hellmayr (1924), Hackett & Rosenberg (1990), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Parker (2003a), Parker & Goerck (1997), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz (1990b), Stotz *et al.* (1996), Whitney & Pacheco (1995, 1997), Willis (1984a), Zimmer (2003a).

## 95. Grey Antwren

### *Myrmotherula menetriesii*

**French:** Myrmidon gris

**German:** Blassgrauer Ameisenschlüpfer

**Spanish:** Hormiguerito Gris

**Other common names:** Ménétries's Antwren

**Taxonomy.** *Myrmothera Menetriesii* d'Orbigny, 1837, Yuracares, Bolivia.

Relationships uncertain, but appears to be closely related to *M. longipennis*. The two are often grouped with *M. axillaris*, *M. schisticolor*, *M. sunensis*, *M. minor*, *M. iheringi*, *M. fluminensis*, *M. behni*, *M. grisea*, *M. unicolor*, *M. snowi* and *M. urosticta* as the "grey antwren assemblage", although this grouping possibly not monophyletic. Pending further study, geographical ranges of races follow those given by previous authors, but some races possibly not diagnosable. Five subspecies recognized.

**Subspecies and Distribution.**

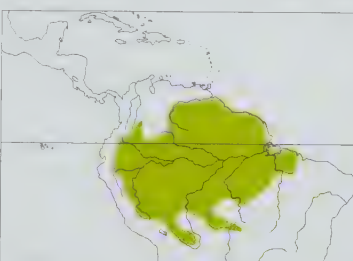
*M. m. pallida* Berlepsch & Hartert, 1902 - SW Venezuela (W Bolívar, Amazonas), NW Brazil (Roraima and Amazonas N of R Amazon), E Colombia, E Ecuador and NE Peru (N of R Amazon and R Marañón).

*M. m. cinereiventris* P. L. Selater & Salvin, 1868 - SE Venezuela (E Bolívar), the Guianas and NE Amazonian Brazil (Amapá, N Pará).

*M. m. menetriesii* (d'Orbigny, 1837) - EC & SE Peru (S of R Amazon and R Marañón), SW Amazonian Brazil (E to R Madeira, S to Acre) and NW Bolivia (W Pando, La Paz, and along base of Andes to W Santa Cruz).

*M. m. berlepschi* Hellmayr, 1903 - SC Amazonian Brazil (R Madeira E to R Tapajós and S to Rondônia) and extreme NC & NE Bolivia.

*M. m. omissa* Todd, 1927 - from R Tapajós E to W Maranhão.



**Descriptive notes.** 8.5-9.5 cm; 8-9 g. Male nominate race is bluish-grey, paler below; wing-coverts with black subterminal bar and white tip, tail narrowly tipped white; centre of throat black, usually with grey feather tips, upper breast with black patch. Female has grey upperparts tinged olive, wings darker, buff throat, rich ochre-buff below, including breast. Juvenile resembles female, but duller and darker; subadult male has upperparts like adult except wings tinged buff, patchily pale grey and pale buff below, sides and flanks buff-tinged olive, crissum buff. Race *berlepschi* male is similar to nominate but less bluish, tail with blackish

subapical band, female is more cinnamon-rufous above, wing edgings cinnamon, richer-coloured tawny-ochraceous below; *cinereiventris* male lacks black on throat and breast (occasionally spots on breast), female upperparts brownish-olive, underparts like nominate; *omissa* resembles previous, female underparts yellow-ochre; *pallida* male is paler than last, especially below, crissum whitish, female similar to nominate. Voice. Loudsong nominate race a series of clear long whistles (e.g. 13 notes, 9 seconds) that are flat initially, gradually shortening slightly while becoming more upslurred, intensity increasing initially, rather low-pitched compared with most congeners (e.g. 1.8-3.3 kHz); *cinereiventris* similar but at higher pitch and rising more (e.g. 2.5-4 kHz), notes becoming downslurred and shortening more, so that acceleration greater (e.g. 12 notes, 6 seconds). Calls multi-noted, include higher-pitched abrupt notes and lower, slightly longer ones in varying combinations, e.g. a low-pitched note, multiple high-pitched notes, and a final low-pitched note or series of high notes, then 2-3 low-pitched notes; all variations delivered rapidly.

**Habitat.** Mid-storey and subcanopy of lowland evergreen forest, both *terra firme* and transitional, locally as high as 1000 m.

**Food and Feeding.** Feeds on variety of insects, including orthopterans (Acrididae), beetles (Coleoptera); also spiders. Caterpillar seen fed to juvenile. Closely associated pair-members, individuals, or family groups forage mainly 6-20 m above ground, sometimes down to 3 m and up to 25 m; mean foraging height from 24 observations in Peru (Cocha Cashu) was 8.9 m; means in Brazil 8.5 m from 247 observations in Rondônia and 10.8 m from 189 observations near Manaus. Almost always with mixed-species flocks led by *Thamnomanes* antshrikes, and mostly above heights used by *M. longipennis* and *M. axillaris*, which usually in same flocks. Very active forager, often almost frenetic in pace, hitching rapidly through mostly slender to medium-sized leafy branches and also in vine tangles hanging alongside major trunks; regularly twitches its tail sideways (similar to tail movements of *M. iheringi*, but much less habitual), also flicks its wings. Frequently leans forward



and cranes neck to peer under leaves, also stretches to peer over leaves; gleans prey from tops and bottoms of live leaves (primarily), stems and vines by reaches or head-first hangs from leaves, stems and branchlets; also commonly makes short diagonal or vertical sallies to bottoms of leaves, often hovering momentarily at apex of sally. Occasionally pauses to scan arboreal dead leaves, but more often ignores them.

**Breeding.** Nests found in Feb in Colombia (Mitú) and Venezuela (Amazonas); juvenile being fed by adults in Dec in French Guiana and in Jul in Bolivia (Pando). Nest composed mostly of dead leaves, wrapped and suspended in fork, in Colombia 4-5 m above ground, in Venezuela 10 m above ground; nest in Madre de Dios, Peru (details previously unpublished), was greyish ball of leaves, c. 7-5 cm in diameter, placed within proximity of larger dark leaves, suspended 8 m up from bifurcation at end of tree limb overhanging a trail, female observed bringing bundles of spider webs to nest. Egg white with very fine brown spots, these condensing into wreath at blunt end.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common to common over most of its large range. Numerous large, protected areas exist within regions inhabited by this species, examples being Alto Orinoco-Casiquiare Biosphere Reserve and Yacapana and La Neblina National Parks, in Venezuela, Brownsberg Nature Park and Raleigh Falls-Voltzberg National Park, in Surinam, Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, and Serra do Divisor, Jaú and Tapajós National Parks, Cristalino State Park and Caxiuanã National Forest, in Brazil. Moreover, there are vast areas of contiguous appropriate habitat which, while not formally protected, appear to be under little threat of development in the near future.

**Bibliography.** Álvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Dick *et al.* (1984), Foster *et al.* (1994), Gonzaga (2001), Hackett & Rosenberg (1990), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Killeen & Schulenberg (1998), Mason (1996), McQueen (2003), Meyer de Schauensee & Phelps (1978), Munn (1984, 1985), Munn & Terborgh (1979), Nehrkorn (1914), Novaes (1965, 1969, 1980), Oniki & Willis (1983b), Oren & Parker (1997), Parker (2003a), Pearson (1975c, 1977a), Powell (1989), Rensen (1986, 2003b), Rensen *et al.* (1986), Reynaud (1998), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Rosenberg (2003), Schönwetter & Meise (1967), Servat (1996), Sick (1993), Stotz (1990b), Stotz & Bierregaard (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer & Bierregaard (1995), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Terborgh & Weske (1969), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1988a, 1994), Tostain (2003), Valente (2000), Wiley (1980), Willis (1977), Zimmer, J.T. (1932b), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997).

## 96. Leaden Antwren

### *Myrmotherula assimilis*

**French:** Myrmidon plombé **German:** Värzeaameisenschlüpfer **Spanish:** Hormiguero Plomizo  
**Other common names:** White-backed Antwren

**Taxonomy.** *Myrmotherula assimilis* Pelzelin, 1868, Rio Amajau, Rio Negro, Brazil. Relationships uncertain. Results of one genetic study suggest that this species is not related to any others in the genus. Two subspecies recognized.

#### Subspecies and Distribution.

*M. a. assimilis* Pelzelin, 1868 - rivers of W & C Amazonia in Peru (E from lower R Marañón), Brazil (E to Amazonas-Pará border, including R Solimões, R Madeira and lower portions of R Negro, R Jurua and R Purus) and N Bolivia (lower R Beni and R Guaporé).

*M. a. transamazonica* Gyldenstolpe, 1951 - R Amazon in extreme W Pará (E to mouth of R Tapajós).

**Descriptive notes.** 9-10 cm; 8.5-9.5 g. Male is grey, paler below; large white interscapular patch; wing-coverts slightly darker grey, narrowly edged white, tail rather narrowly tipped white. Female is grey above, wings and tail dark brownish-grey, remiges edged pale brown, wing-coverts tipped buff-tipped white, tail very narrowly tipped pale buffish-white, throat whitish, underparts buff. Race *transamazonica* male is distinctly paler, especially upperparts, and wing longer. Voice. Loudsong a trill of extremely rapidly delivered notes (e.g. 55 notes, 3-5 seconds), accelerates throughout, intensity increases slowly at beginning and

drops quickly at end, pitch rises slightly at beginning and falls more sharply at end. Call a short, downslurred "snew", emphatic and somewhat harsh.

**Habitat.** Understorey and mid-storey of lowland evergreen forest and adjacent scrub at river edges. Occurs in both várzea and igapó forest, both on river islands and along river borders of land. On river islands primarily in interior of older forest or more mature stands of secondary woodland, but may occasionally venture into adjacent younger second growth to forage.

**Food and Feeding.** Little published. Feeds on various insects, particularly orthopterans and adult and larval lepidopterans; probably also on spiders. Clips wings from adult lepidopterans before consuming them; similarly, removes legs from large orthopterans, mainly katydids (Tettigoniidae), and mandibulates these extensively (30-60 seconds) before swallowing. Closely associated pair-members, individuals, or family groups forage mostly at 1-5-7 m, less commonly down to ground, rarely up to 15 m or higher; frequently alone, sometimes with mixed-species flocks. Seems to prefer inner portions of tree profile, spending most time working more open branches and, especially, hanging woody vines; moves vertically more than horizontally, but often in zigzag fashion and retracing route, hitching from side to side as it goes, and routinely flicking the wings and tail; moves actively, but rather deliberately, pausing frequently between hops for 1-2 seconds to scan. Prey taken at least as often from stem, branch or vine surfaces as from leaves, usually by direct perch-gleans, sometimes by short sally-gleans or hover-gleans; also frequently leans forward and peers under branches, or hangs upside-down to glean prey below; also regularly drops to ground to take prey from surface of leaf litter. Arboreal dead leaves regularly scanned and probed, but also

frequently ignored; many dead leaves scanned by craning the neck and peering into the curl without inserting the bill.

**Breeding.** Nothing known. Adult male seen to feed begging juvenile on 11th Oct in Brazil (Anavilhanas Archipelago, on R Negro).

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Fairly common but patchily distributed throughout its narrow, somewhat linear range, which extends along much of R Amazon and portions of its major tributaries. There are few formally protected reserves or parks which incorporate the river-island and river-edge flooded forests occupied by this species. Probably the largest of these is Rio Negro State Park (4360 km<sup>2</sup>), which encompasses the Anavilhanas Archipelago, an extensive and largely pristine series of black-water river islands in which this antwren is common; this park is contiguous with Jaú National Park (22,720 km<sup>2</sup>), which also contains extensive suitable habitat. River islands and várzea forests where the species occurs along the Amazon, Jurua, Purus and Madeira rivers, even where under no formal protection, are subject to generally low levels of human colonization and disturbance.

**Bibliography.** Álvarez (1994), Cory & Hellmayr (1924), Hackett & Rosenberg (1990), Hilty & Brown (1986), Isler & Whitney (2002), Parker (2003a), Parker *et al.* (1991), Rensen & Parker (1983), Ridgely & Tudor (1994), Rosenberg, G.H. (1990), Sick (1993), Stotz *et al.* (1996), Zimmer, J.T. (1932b), Zimmer, K.J. (2003a).

## Genus *DICHROZONA* Ridgway, 1888

## 97. Banded Antbird

### *Dichrozona cincta*

**French:** Grisin sanglé **German:** Bürzelbinden-Ameisenfänger **Spanish:** Hormiguero Bandeado  
**Other common names:** Banded Antwren/Antcatcher

**Taxonomy.** *Cyphorhinus (Microcerulus) cinctus* Pelzelin, 1868, São Joaquim, Amazonas, Brazil. Relationships uncertain. Specimens from extreme ends of range differ in plumage coloration; named races *stellata* (E Ecuador, W Brazil) and *zononota* (WC Brazil, N Bolivia) described primarily on basis of darkness and coloration of crown and back, darkness and extent of grey on flanks, and size and number of breast spots, but comparative documentation considered insufficient; further study required to determine whether any geographical races, with defined distributions, are recognizable. Monotypic.

**Distribution.** Extreme SW Venezuela (SW Amazonas), SC & E Colombia (along E base of Andes S from Meta, and in extreme E Guainía), E Ecuador, E Peru, and extreme NW and S Amazonian Brazil (upper R Negro drainage, and from W Amazonas E to Pará in the R Xingu drainage and S to Acre and N Rondônia) S to NW Bolivia (Pando, Beni, La Paz).

**Descriptive notes.** 9-10 cm; 14-15.5 g. Long bill, short tail. Male has thin white supercilium, blackish line through eye, greyish cheek to neck side; crown to upper back cinnamon-brown (variably darker or browner), lower back to uppertail-coverts banded black, white, black, grey; white interscapular patch; wings black, flight-feathers edged cinnamon to chestnut, wing-coverts tipped buff to white; tail black, outer rectrices mostly white; white below, band of black spots across breast, flanks brownish-grey, variable, e.g. more and larger spots and more extensive and darker grey in W ("*stellata*"). Female is similar to male, but

band across lower back buff, underparts tinged buff, fewer breast spots. Voice. Vocalizes from ground, or low stump or log. Loudsong a long series of drawn-out notes (e.g. 16 notes, 15 seconds) that become more intense, shorten slightly and rise in pitch gradually, intervals much shorter than notes. Calls include short whistle rising, falling, then rising up scale, sounding like "wheee-up", also variable-length (e.g. 0.5-1 second) rattle.

**Habitat.** Floor of lowland evergreen forest, to 800 m. Mainly, if not entirely, in *terra firme* forest, with preference for slopes with relatively open understorey and well-developed layer of leaf litter.

**Food and Feeding.** Not well known. Probably feeds on various insects and other arthropods. Terrestrial; walks slowly on forest floor, forages mainly by stabbing and probing in leaf litter, peering under leaves, and sometimes flipping leaves with its bill to reveal concealed prey. Occasionally reaches up or jumps up to glean items from overhanging stems or leaves. While walking, bobs head forwards, also occasionally fans tail to expose white outer feathers and flicks wings to expose white patch on back. Jumps up to small saplings to look around, and sometimes on to tree stumps or fallen logs to vocalize.

**Breeding.** Little known. Single described nest from E Ecuador, an open cup placed 0-1 m above ground in fork of low bush in forest; two tiny, bob-tailed fledglings seen in area in late Nov.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Status not well known; generally considered uncommon and somewhat locally distributed throughout its extensive range. Range encompasses several protected areas with vast expanses of suitable habitat, e.g. Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, Serra do Divisor and Tapajós National Parks and Caxiuanã National Forest, in Brazil, and Madidi National Park, in Bolivia. In addition, there are huge areas of contiguous appropriate habitat that are not formally protected, but are under little threat of development in the near term.

**Bibliography.** Aleixo *et al.* (2000), Cory & Hellmayr (1924), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), O'Neill & Pearson (1974), Oren & Parker (1997), Parker (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rosenberg (2003), Sick (1993), Stotz *et al.* (1996), Willis (1988b, 1991), Zimmer, J.T. (1931a), Zimmer, K.J. (2003a).









PLATE 54

inches 2  
cm 5



# Genus *MYRMORCHILUS* Ridgway, 1909

## 98. Stripe-backed Antbird

### *Myrmorchilus strigilatus*

**French:** Grisin à dos rayé

**German:** Strichelrücken-Ameisenfänger

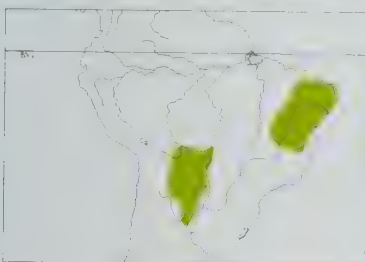
**Spanish:** Hormiguero Estriado

**Taxonomy.** *Myiothera strigilata* Wied, 1831, Bahia, Brazil. Relationships uncertain. Two subspecies recognized.

#### Subspecies and Distribution.

*M. s. strigilatus* (Wied, 1831) - NE Brazil (extreme E Piauí, C Ceará and Rio Grande do Norte S to N Minas Gerais).

*M. s. suspicax* Wetmore, 1922 - SE Bolivia (S Santa Cruz S to Tarija), adjacent Brazil (extreme SW Mato Grosso, W Mato Grosso do Sul), W Paraguay (W of R Paraguay) and N Argentina (W of R Paraná, S to Santiago del Estero and Santa Fe).



**Descriptive notes.** 15-16 cm; 23-26 g. Male has white supercilium, dark line through eye; crown to back rufous, streaked black, outer scapulars edged white, rump and uppertail-coverts rufous; tail rufous and black, white tip and outer edges; wings black, flight-feathers partly edged rufous, wing-coverts tipped white; chin, throat and breast black, remaining underparts white, sides and flanks spotted black, crissum tinged buff. Female lacks black on chin to breast, is more buff below, streaked on sides and lightly on breast. Race *suspicax* male has supercilium tinged buff, flanks and crissum buff, female has supercilium brownish, flanks and crissum deeper buff. **Voice.** Loudsong of male brief (e.g. 0-8 seconds), a short, somewhat rough note followed after an interval by 2 longer whistles, each rising and falling in pitch, final note longest; female song longer (e.g. 2-4 seconds), starts with similar note followed by long second note, then c. 6 notes declining in pitch and intensity. Call a long (e.g. 0-35-0-5 seconds) whistle, entirely downslurred or slightly rising and falling.

**Habitat.** Ground and understorey of deciduous Chaco and *caatinga* woodlands and scrub, to 1100 m. Most common where canopy height exceeds 2 m and interlacing branches of trees and shrubs form fairly continuous canopy, often with abundant ground cover of terrestrial bromeliads.

**Food and Feeding.** Little published. Feeds on insects, possibly also other arthropods. Pairs or individuals forage mostly on the ground beneath dense shrubbery and low trees, occasionally climbing up in vegetation to heights of 1-2 m. Forages in dry leaf litter and clumps of terrestrial bromeliads, picking through litter with its bill, occasionally vigorously kicking with its feet to stir up litter. Perch-gleans prey by reaching and picking; sometimes makes short, wing-assisted jumps to glean prey from underside of overhanging foliage, branches or vines.

**Breeding.** Little known. Single nest described from Argentina (Santiago del Estero), an open cup 4 cm deep, with inside diameter 9 cm, external diameter 10-5 cm, loosely built of dry grasses (*Setaria*) with lining of garabato (*Acacia praeox*) rachides, placed on ground on freshly opened path in mature secondary woodland; 2 eggs, pale pink, with maroon blotches concentrated mainly on larger end.

**Movements.** Presumed resident in both parts of range.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of its disjunct Chaco and *caatinga* ranges. Although species is under no immediate threat, there are relatively few reserves or parks protecting these dry-forest and arid-scrub habitats, which are subject to increasing pressure from expanding human populations, and which have traditionally been considered low conservation priorities at both national and international levels. Conversion to agriculture, grazing by cattle and goats, and removal of woody vegetation for firewood are primary threats facing both the Chaco and the *caatinga* biomes and their highly endemic avifaunas. Establishment of a proposed "mata-de-cipó" reserve in Boa Nova-Jequié region of Bahia, Brazil, would protect a significant population of nominate race, as well as viable populations of more threatened antbirds, such as globally threatened *Formicivora theringi* and *Rhopornis ardesiacus*. Similar reserves needed in the Alto Chaco and Matogrossense regions of N Paraguay and in Bolivian Chaco of Santa Cruz; these would provide important refuges for a number of endemic birds, among them race *suspicax* of present species.

**Bibliography.** Caziani & Protomastro (1991), Cintra & Yamashita (1990), Coelho (1987), Cory & Hellmayr (1924), Hayes (1995), Isler & Whitney (2002), do Nascimento *et al.* (2000), Naumburg (1939), Norez & Yzurieta (1983), Olmos (1993), Parker, Gentry *et al.* (1993), de la Peña (1988), Remsen *et al.* (1988), Ridgely & Tudor (1994), Sick (1993, 1997), Wetmore (1926), Willis & Oniki (1991), Zimmer (2003a).

# Genus *HERPSILOCHMUS* Cabanis, 1847

## 99. Spot-backed Antwren

### *Herpsilochmus dorsimaculatus*

**French:** Grisin strié

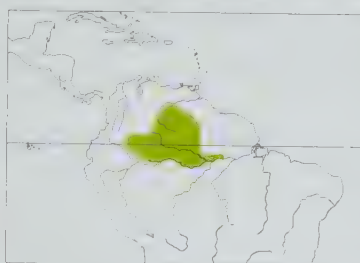
**German:** Fleckenmantel-Ameisenfänger

**Spanish:** Tiluchi Dorsimanchado

**Taxonomy.** *Herpsilochmus dorsimaculatus* Pelzeln, 1868, Marabitanas, Rio Negro, Amazonas, Brazil. Relationships with other species in genus unclear. Monotypic.

On following pages: 101. Bahia Antwren (*Herpsilochmus pileatus*); 102. Black-capped Antwren (*Herpsilochmus atricapillus*); 103. Creamy-bellied Antwren (*Herpsilochmus motacilloides*); 104. Ash-throated Antwren (*Herpsilochmus parkeri*); 105. Dugand's Antwren (*Herpsilochmus dugandi*); 106. Spot-tailed Antwren (*Herpsilochmus sticturus*); 107. Roraiman Antwren (*Herpsilochmus roraimae*).

**Distribution.** S Venezuela (W & S Bolívar, Amazonas), E Colombia (E Guainía, E Vaupés, E Caquetá) and NW Amazonian Brazil (E to R Trombetas in NW Pará).



**Descriptive notes.** 11-12 cm; 9-5-10-5 g. Long tail graduated. Male has black crown, long white supercilium, black eyestripe; dark grey upperparts with blackish patches, back feathers extensively edged white, outer scapulars black, edged white, concealed white interscapular patch; flight-feathers grey and black, edged white posteriorly, wing-coverts black, tipped white; tail black with white sides, tips white; underparts extensively white, tinged pale grey at sides and rear. Female differs from male in having buff on forehead, crown spotted white, buff on head side and breast. Subadult is like female except buffier. **Voice.** Loudsong a

somewhat short (e.g. 1-5 seconds) trilling rattle, intensity and pitch rise and then drop, final notes with overtones imparting harsh quality. Call a short (e.g. 0-1 second) downslurred plaintive note, repeated often but irregularly.

**Habitat.** Canopy and subcanopy of humid, lowland evergreen forest, to 600 m. In Venezuela (Amazonas), most often found in vine-rich canopy of seasonally flooded black-water forest (*igapó*); near Manaus (Brazil), restricted to canopy of tall *terra firme* forest or, less commonly, stunted *campina* woodland growing on white-sand soils.

**Food and Feeding.** Little published. Feeds on insects, including orthopterans and lepidopteran larvae; probably also on spiders. Closely associated pair-members, individuals, or family groups forage mostly 15-30 m above ground, occasionally as low as 5 m in stunted sandy-soil woodland; sometimes alone, but more often with mixed-species flocks. Active but methodical forager, progressing by short hops, with intervening pauses of 1-2 seconds to scan foliage for prey. Concentrates activities in leafy outer branches and crowns of trees, particularly where overlapping branches and vine tangles form mats or sprays of vegetation; also hitches upwards along vine tangles and philodendrons (*Philodendron*) close to central trunks and major branches. Prey mostly perch-gleaned from live-leaf surfaces (mostly their tops) by quick stabs or short lunges; sometimes hover-gleans or flutter-gleans from underside of overhanging vegetation, or makes short sallies; seldom uses acrobatic manoeuvres such as hanging. Not known to follow army ants.

**Breeding.** Nothing known.

**Movements.** Presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Orinoco-Negro White-sand Forests EBA. Fairly common throughout most of its range. Region inhabited by this species includes some large, protected areas, e.g. Yacapana and La Neblina National Parks, in Venezuela, and Pico da Neblina National Park, Waimiri-Atrorai Indigenous Reserve, Ducke Reserve and the BDFFP INPA forests near Manaus, in Brazil; also extensive intact habitat which, although not formally protected, appears to be at little risk of development in near future. This species considered highly sensitive to human disturbance.

**Bibliography.** Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Davis & O'Neill (1986), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Ridgely & Tudor (1994), Sick (1993), Stiles *et al.* (1995), Stotz (1990b), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Zimmer (2003a), Zimmer & Hilty (1997).

## 100. Caatinga Antwren

### *Herpsilochmus sellowi*

**French:** Grisin de Sellow

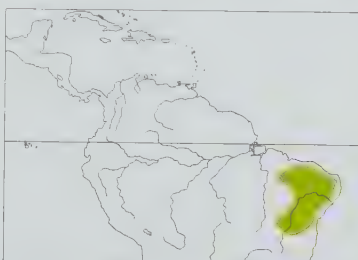
**German:** Caatingameisenfänger

**Spanish:** Tiluchi de Caatinga

**Taxonomy.** *Herpsilochmus sellowi* Whitney and Pacheco, 2000, Boa Nova, Bahia, Brazil.

Considered part of a clade that also includes *H. pileatus*, *H. atricapillus*, *H. motacilloides* and *H. parkeri*. Present species was long known under name of "*H. pileatus*", but recent study showing that population of SE Bahia is a distinct species also revealed that this name is actually applicable to the newly discovered form; a replacement scientific name for present species was thus required and supplied. Monotypic.

**Distribution.** NC & E Brazil (Maranhão E to Rio Grande do Norte and S to Bahia and extreme N Minas Gerais).



**Descriptive notes.** 10-5-11-5 cm; 7-8 g. Male has black crown and nape, white lores, long white to pale grey supercilium, short blackish postocular streak; upperparts grey, white interscapular patch usually with some black feather tips, blackish outer scapulars edged white; wings black, remiges edged white, coverts tipped white; graduated tail black, large white tips, outer feathers edged white; underparts white, tinged grey on breast, sides, flanks and crissum; underwing-coverts white. Distinguished from very similar *H. atricapillus* by shorter postocular streak, no black loreal spot, shorter narrower bill, other measurements. Female differs from male in having forehead and forecrown feathers edged dull buff (dappled effect), indistinct postocular streak, olive tinge above, supercilium and underparts tinged pale buff, underwing-coverts faintly tinged yellow. **Voice.** Loudsong a rapid series of similar notes (e.g. 40 notes, 2-8 seconds) mostly repeated at same pitch and pace, but rising and falling in pitch and amplitude at beginning and end. Rattle-like call a short (e.g. 6 notes) repetition of "wiip" notes; rattle short (e.g. 1 second), rising in pitch, usually introduced by slightly longer downslurred note.

**Habitat.** Middle and upper strata of *caatinga* woodland and scrub, *mata-de-cipó* vine forest, *caatinga-cerrado* ecotone; also *restinga* woodland in coastal Rio Grande do Norte; mostly at 300-900 m, but locally to 1100 m, and to near sea-level in N. Most numerous in semi-deciduous *caatinga* woodland and *mata-de-cipó* forest (semi-deciduous forest rich in vines and terrestrial



bromeliads at 700–1000 m Bahia); usually absent from more humid evergreen forest and arid lowland *caatinga* scrub.

**Food and Feeding.** Little published. Feeds on variety of insects, including orthopterans, particularly katydids (Tettigoniidae), also lepidopteran larvae, hemipterans and coleopterans; probably also on spiders. Stomach contents of two specimens from Pará contained orthopterans, beetles (Curculionidae) and hemipterans. Closely associated pair-members, individuals, or family groups forage mostly from 1–5 m (at shrubby borders and in dense *mata-de-cipó* woodland) to 12 m above ground. Alone, or with mixed-species flocks; often occurs in same flocks as syntopic *H. atricapillus*, then more often forages in open branches beneath canopy and in low, shrubby vegetation than latter; more locally, with *H. pectoralis* or *H. rufomarginatus*. Active but methodical forager, progressing steadily by short hops, separated by frequent pauses of 1–2 seconds to scan foliage, stems and branches. Typical foraging posture is horizontal, with the tail held slightly above plane of body and frequently lowered and then flicked upwards in shallow arc; both wings also regularly flicked, but not in exaggerated fashion. Prey usually perch-gleaned from live leaves or stems by reaching up, out or down and picking, or by short horizontal lunges; less frequently hangs head down to glean prey from tops of leaves, or makes short (15–30 cm) vertical sallies to underside of overhanging vegetation; seldom investigates dead leaves. Prey capture often accompanied by audible snap of the mandibles; most smaller items are immediately gulped; larger prey, such as many katydids, routinely beaten several times against a branch before being swallowed. Not known to follow army ants.

**Breeding.** Almost nothing known. One record of nearly fledged young in Feb.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout most of range. Known to occur in three protected areas: Chapada do Araripe National Forest (Ceará), Chapada Diamantina National Park (Bahia) and Cavernas do Peruáçu National Park (Minas Gerais). Most of its range, however, is without formal protection. Considered to be of medium sensitivity to human disturbance. Main problem is habitat loss and degradation. The dry forest, *caatinga* scrub and *mata-de-cipó* woodland favoured by this species are being rapidly cleared for cattle pastures and coffee plantations; even where not being cleared, they are being heavily exploited by local people for firewood and fence-post production, with grazing by cattle and goats preventing regeneration of most of the woody plants. The *mata-de-cipó* woodlands of Bahia, despite harbouring a high proportion of endemic and threatened species, remain unprotected; establishment of one or more reserves, preferably in Jequié-Boa Nova region, is a high priority. Until such reserves are set up, the future of this and other dry-forest endemics of the region will remain in question.

**Bibliography.** Anon (2001a), Gonzaga (2001), Isler & Whitney (2002), Kirwan *et al.* (2001), Olmos (1993), Pacheco & Parrini (2002), Parrini *et al.* (1999), Schubart *et al.* (1965), Snethlage (1928), Whitney *et al.* (2000), Zimmer (2003a).

## 101. Bahia Antwren

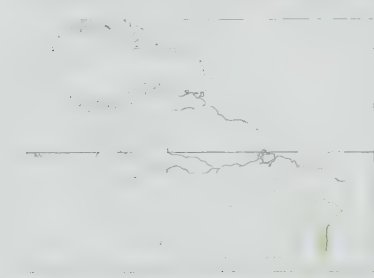
### *Herpsilochmus pileatus*

**French:** Grisin à coiffe noire **German:** Weißbrauen-Ameisenfänger **Spanish:** Tiluchi Pileado  
**Other common names:** White-browed/Pileated Antwren

**Taxonomy.** *Myiothera pileata* M. H. K. Lichtenstein, 1823, Trancoso, Bahia, Brazil.

Considered to be part of a clade that includes *H. sellowi*, *H. atricapillus* and *H. motacilloides*, all previously merged with present species, and *H. parkeri*. Present species only recently separated taxonomically; name “*H. pileatus*” long applied to *H. sellowi*, but studies in connection with taxonomic recognition of present species showed that the name was actually applicable to the newly discovered form: a replacement scientific name for the long-known form was thus required and supplied, “*H. sellowi*”. Monotypic.

**Distribution.** Coastal E Brazil in Bahia (S of Salvador).



**Descriptive notes.** 10.5–11 cm; two birds 8.5 g and 9.3 g. Male has black crown and nape, long white to pale grey supercilium, small blackish preocular spot, long blackish postocular streak; upperparts grey, white interscapular patch usually with some black feather tips, blackish outer scapulars edged white; wings black, remiges edged white, coverts tipped white; tail black, large white tips, outer feathers edged white; underparts white, washed grey, underwing-coverts white. Distinguished from extremely similar *H. atricapillus* by voice, in the hand by shorter, less graduated tail. Female differs from male in buffish forehead, extensively white-streaked crown, olive tinge above, faint ochraceous tinge below. Voice.

Loudsong a series of 4–7 accelerating notes followed by evenly paced notes, pitch and intensity rise and fall slightly at beginning and end (mean of 22 songs was 25 notes, 2–2 seconds). Calls include short note sounding like “greep”, and rather slow-paced rattle.

**Habitat.** Mid-storey and canopy of low-stature *restinga* woodland growing on sandy soils.

**Food and Feeding.** Nothing published. Feeds on insects, probably also spiders. Closely associated pair-members, individuals, or family groups forage mostly from 5 m up to the canopy, frequently lower in scrubby *restinga*, alone or with mixed-species flocks of other insectivores. Gleans prey mostly from foliage, but also from stems, vines and branches, mostly by reaches or short lunging stabs; sometimes by short sallies and hover-gleans.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted to a narrow band of *restinga* woodland and coastal forest in S Bahia, occurring only a short distance inland. Common in several localities. Relatively little of its habitats is currently accorded protected status: two of the more important protected sites are Monte Pascoal National Park and the Porto Seguro/Florestas Rio Doce SA Forest. Planned large-scale developments of beach resorts in S coastal Bahia could have a major negative impact on the conservation status of this species.

**Bibliography.** Collar & Andrew (1988), Collar *et al.* (1994), Cory & Hellmayr (1924), Davis & O'Neill (1986), Isler & Whitney (2002), Sick (1993), Stattersfield & Capper (2000), Whitney *et al.* (2000), Zimmer (2003a)

## 102. Black-capped Antwren

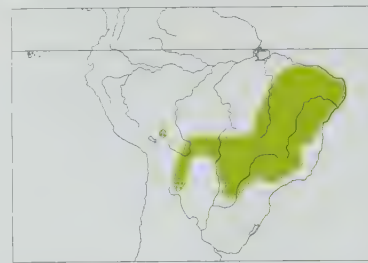
### *Herpsilochmus atricapillus*

**French:** Grisin mitré **German:** Schwarzscheitel-Ameisenfänger **Spanish:** Tiluchi Plomizo

**Taxonomy.** *Herpsilochmus atricapillus* Pelzel, 1868, Porto do Rio Paraná (probably = União), São Paulo, Brazil.

Until recently treated as conspecific with *H. sellowi* and *H. pileatus*; these three are considered to belong to a clade that also includes *H. motacilloides* and *H. parkeri*. Although no geographical races described, plumage and vocal variations exist across its extensive range; further research required. Monotypic.

**Distribution.** Extreme NW Argentina (Jujuy, Salta), W & E Bolivia (SW La Paz, and from Santa Cruz S along base of Andes), E Paraguay (E of R Paraguay) and SC & E Brazil (S Mato Grosso, Mato Grosso do Sul, extreme W Paraná and São Paulo N to Maranhão and Rio Grande do Norte).



**Descriptive notes.** 11–12 cm; 8–11 g. Both sexes vary in darkness and colour intensity of plumage. Male has black crown and nape, forehead with a few light feather tips, long white to pale grey supercilium, small blackish preocular spot, long blackish postocular streak; upperparts grey, white interscapular patch usually with some black feather tips, blackish outer scapulars edged white; wings black, remiges edged white, coverts tipped white; graduated tail black, large white tips, outer rectrices edged white; variably grey to pale grey below, belly white, underwing-coverts white. Distinguished from very similar *H. sellowi* by longer

postocular streak, black loreal spot, longer broader bill, other measurements. Female differs from male in buffish forehead, extensively white-streaked crown, olive tinge above, supercilium and underparts tinged pale buff, breast more ochraceous, underwing-coverts faintly tinged yellow. Voice. Loudsong 1–2 (rarely 3) distinct notes leading into rapid series (e.g. 24 notes, 2–3 seconds) rising and falling in pitch and slowing, initial notes at same pitch or higher than abrupt notes that follow; rattle usually a series of short but complex notes, more rarely a shorter series of simpler notes. Calls include abrupt, sharply downslurred note, and longer note that rises and falls in pitch.

**Habitat.** Middle and upper strata of deciduous, semi-deciduous and evergreen forest, also gallery forest, mostly below 800 m; present up to 1450 m along base of Andes. In NE Brazil, common in taller deciduous *caatinga* woodland, semi-deciduous *mata-de-cipó* forest, and humid evergreen forest.

**Food and Feeding.** Little published. Feeds on various insects, including especially lepidopteran larvae and orthopterans; probably also on spiders. Closely associated pair-members, individuals, or family groups forage mostly 7–20 m above ground, often lower at forest edge, rarely down to 1 m, usually in leafier outer branches and crowns of trees and in central vine tangles. Alone or, more frequently, with mixed-species flocks; in parts of its range, often in same flocks as *H. sellowi*. Active but methodical forager, progressing by short hops, with pauses of up to 3 seconds to scan for prey; zigzags through branches and foliage with frequent changes of direction, often fluttering abruptly downwards for several metres in pursuit of dislodged prey; hitches from side to side with almost every hop, and usually thoroughly covers one tree before moving on to next. When foraging, usually holds its wings slightly drooped, and flicks them constantly; posture is horizontal, with tail held cocked 10–30 degrees above horizontal. Most prey gleaned from live leaves (particularly top surfaces), branches or vine surfaces, by reaches (out, up or down) or by short lunging stabs; often makes short (20–40 cm), upward-directed, diagonal sallies to take prey from underside of overhanging vegetation, then continues to another perch to consume prey; only rarely hangs down or performs other acrobatic manoeuvres in pursuit of prey. Occasionally probes suspended dead leaves, but more often ignores them. Small items consumed immediately; larger prey often beaten against thick branches several times before being swallowed. Not known to follow army ants.

**Breeding.** Nothing recorded. Family groups with juveniles fed by adults observed in Jan–Feb in Brazil (Ceará and Bahia).

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout most of its range. Considered to be of medium sensitivity to human disturbance. Range includes several protected areas, such as, in Brazil, Brasília, Araguaia, Chapada Diamantina and Serra do Cipó National Parks, Caraca National Park and Chapada do Araripe National Forest. In Brazil, particularly common in Jequié-Boa Nova region (Bahia) and in foothills and higher reaches of Serra de Baturité (Ceará), neither of which is formally protected, and both of which harbour a significant number of regional endemics and threatened species. Establishment of appropriate reserves in these areas would have the side benefit of protecting significant populations of present species. Its utilization of multiple habitat types renders it less vulnerable to disturbance than are locally syntopic species, such as *H. sellowi*, which are more restricted to dry-forest habitats.

**Bibliography.** Almeida *et al.* (1999), Braz & Cavalcanti (2001), Cory & Hellmayr (1924), Davis, S.E. (1993), Davis, T.J. & O'Neill (1986), Ferreira de Vasconcelos & Melo-Júnior (2001), Flores *et al.* (2001), Gonzaga (2001), Hayes (1995), Isler & Whitney (2002), Maldonado-Coelho & Marini (2000), do Nascimento *et al.* (2000), Naumburg (1939), Parker (2003a), Parker, Gentry *et al.* (1993), Parrini *et al.* (1999), Ridgely & Tudor (1994), Schubart *et al.* (1965), Schulenberg & Awbery (1997b), Sick (1993), Snethlage (1928), Stotz *et al.* (1996), Whitney & Álvarez (1998), Whitney *et al.* (2000), Zimmer (2003a).

## 103. Creamy-bellied Antwren

### *Herpsilochmus motacilloides*

**French:** Grisin motacilloide **German:** Fahlbauch-Ameisenfänger **Spanish:** Tiluchi Motaciloide  
**Other common names:** Yellow-bellied Antwren

**Taxonomy.** *Herpsilochmus motacilloides* Taczanowski, 1874, Maraynioc, Junin, Peru.

Formerly treated as a race of *H. pileatus*; considered with latter to be part of a clade that also includes *H. sellowi*, *H. atricapillus* and *H. parkeri*. Monotypic.

**Distribution.** E slope of Andes in Peru (Huánuco S to Cuzco).

**Descriptive notes.** 11–12 cm; 1 bird 12.5 g. Male has black crown and nape, forehead with a few light feather tips, long white to pale grey supercilium, black lores and long postocular streak; upperparts grey, white interscapular patch usually with some black-tipped feathers, blackish and grey outer scapulars edged white; wings black, remiges edged white, coverts tipped white; graduated tail black, large white tips, outer rectrices edged white; throat white, faintly spotted light grey, rest of underparts pale creamy yellow, sides washed grey. Distinguished from similar *H. atricapillus* by having entire loreal area from bill to eye black, spotted throat, yellowish underparts. Female differs from male in buffish forehead, extensively white-streaked crown, olive tinge above, pale yellow wing edgings. Voice. Loudsong 1–3 long flat notes followed by rapid series (e.g. 22 notes, 1–7 seconds) of abrupt notes, series descending in pitch. Call an abrupt, sharply downslurred note like that of *H. atricapillus*.





**Habitat.** Canopy and subcanopy of humid, montane evergreen forest and forest borders, at elevations of 1000-2500 m. Prefers dense, tall forest with heavy moss and epiphytic growth on trees.

**Food and Feeding.** Little known. Presumed to feed on various insects, probably also spiders. Closely associated pair-members, individuals, or family groups forage mostly in canopy and subcanopy, alone or, more often, with mixed-species flocks of other insectivores. Tends to concentrate foraging activities in leafy outer branches and crowns of trees. Not known to follow army ants.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Peruvian East Andean Foothills EBA. Fairly common but patchily distributed within its tiny range. Major threat to its conservation is deforestation; forest within the region remains relatively intact, especially above 900 m, but extensive areas are being logged and cleared for agriculture as human colonization increases. This species is considered to be highly sensitive to human disturbance.

**Bibliography.** Cory & Hellmayr (1924), Davis & O'Neill (1986), Isler & Whitney (2002), Mee *et al.* (2002), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Zimmer (1932c).

## 104. Ash-throated Antwren

### *Herpsilochmus parkeri*

**French:** Grisin de Parker **German:** Graukehl-Ameisenfänger **Spanish:** Tiluchi de Parker  
**Other common names:** Parker's Antwren

**Taxonomy.** *Herpsilochmus parkeri* Davis and O'Neill, 1986, 15 km north-east of Jirillo, San Martín, Peru. Considered to be part of the *H. pileatus* clade, also including *H. sellowi*, *H. atricapillus* and *H. motacilloides*. Monotypic.

**Distribution.** E slope of Andes in NC Peru (San Martín).



**Descriptive notes.** 11.5-12.5 cm. Male has black crown and nape, forehead with a few light feather tips, long white to pale grey supercilium, black lores and long postocular streak; upperparts darkish grey, some feathers tipped black, white interscapular patch usually with some black tips, blackish outer scapulars edged white; wings black, remiges edged white, coverts tipped white; graduated tail black, large white tips, outer rectrices edged white; throat and underparts rather dark grey, belly whiter. Distinguished from similar *H. atricapillus* by being darker above and below, entire laral area from bill to eye black.

longer postocular streak. Female differs from male in extensively dark buff forehead, buff supercilium, pale buff throat, darker buff neck side and breast, buffish-olive sides, buffy grey flanks. Voice. Loudsong 1-3 short notes followed by rapid descending series (e.g. 21 notes, 2 seconds) of abrupt notes, similar to that of *H. motacilloides* except initial notes shorter and series not dropping so much in frequency. Call an abrupt, sharply downslurred note like that of *H. atricapillus*, repeated in groups of 2-3.

**Habitat.** Canopy and subcanopy of montane evergreen forest bordering savanna, at elevations of 1250-1450 m. Found in semi-stunted woodland with maximum canopy height 12 m, and with dense understorey and abundant epiphytes, on poor sandy soils; also in taller forest with closed canopy of 20-30 m.

**Food and Feeding.** Little known. Stomachs of five specimens contained variety of insects, primarily beetles (including Curculionidae, Coccinellidae), hemipterans and hymenopterans, with smaller numbers of homopterans, orthopterans, dermapterans, also one spider (probably Salticidae). Closely associated pair-members, individuals, or family groups forage mostly from mid-levels up to the canopy. Alone or, more often, with mixed-species flocks of other insectivores, including (most commonly) Ocellated Woodcreeper (*Xiphorhynchus ocellatus*), Buff-throated Foliage-gleaner (*Automolus ochrolaemus*), Streaked Xenops (*Xenops rutilans*), *Myrmotherula schisticolor*, and Buff-throated Tody-tyrant (*Hemitriccus rufularis*). E of Abra Patricia Pass, sometimes occurs in same flocks with *H. axillaris*. Not known to follow army ants.

**Breeding.** Virtually unknown. Birds with reduced gonads and worn plumage in Oct-Nov, suggesting that breeding just completed and post-breeding moult yet to begin; breeding season hypothesized to be during May-Sept dry season.

**Movements.** Presumed resident.

**Status and Conservation.** **ENDANGERED.** Restricted-range species: present in Andean Ridge-top Forests EBA. To date, known only from the low mountain range N of Moyobamba Valley (upper R Mayo), in San Martín, extending from the type locality, near Jesús del Monte, to above Afluente E of Abra Patricia pass (Pardo de Miguel); apparently not present at similar elevations S of the valley, where appears to be replaced by *H. axillaris*. Although fairly common near type locality, it has a tiny global range, and total population could number fewer than 1000 birds; given ongoing habitat destruction within its range, population can be assumed to be declining. Widespread destruction of mid-elevation Andean forests for cultivation of coca and coffee poses significant threat to many species of foothill bird. Lowland areas in R Huallaga Valley E of where present species occurs are almost entirely deforested, and clearance is gradually extending up the slopes of the mountain. The Afluente-Abra Patricia area, where the species has only recently been found, is under pressure following road improvements and resulting increased immigration and local increases in human population; many areas of potentially suitable habitat being cleared for timber extraction, agriculture and human settlement. Surveys designed to shed more light on the geographical distribution and population levels of this antwren are an immediate need, as is enforced protection of the type locality and the Alto Mayo Protected Forest.

**Bibliography.** Begazo *et al.* (2001), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Davis & O'Neill (1986), Isler & Whitney (2002), O'Neill (1993), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Valqui & Begazo (2003), Zimmer (2003a).

## 105. Dugand's Antwren

### *Herpsilochmus dugandi*

**French:** Grisin de Dugand

**German:** Westamazonischer Ameisenfänger

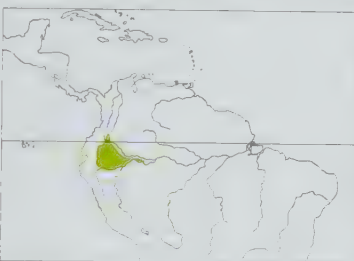
**Spanish:** Tiluchi de Dugand

**Other common names:** Colombian Antwren

**Taxonomy.** *Herpsilochmus sticturus dugandi* Meyer de Schauensee, 1945, Belén, 600 feet [c. 180 m], Caquetá, Colombia.

Forms a superspecies with *H. sticturus*; formerly considered conspecific, but separated on basis of differences in female plumage and in calls. Monotypic.

**Distribution.** Extreme S & SE Colombia (base of Andes in Caquetá, and Leticia area in SE Amazonas), E Ecuador and NE Peru (N of R Maraón and R Amazon).



**Descriptive notes.** 10.5-11.5 cm; 9.3-11.3 g. Male has black crown and nape, long pale grey to white supercilium, black laral stripe and postocular stripe; dark grey upperparts variably patched black, white interscapular patch, black outer scapulars edged white; wings black, flight-feathers edged white posteriorly, coverts tipped white; short tail graduated, black, tips white, long white streak on inner web of central rectrices; throat and underparts pale grey, centre of belly white, underwing-coverts white. Differs from extremely similar *H. sticturus* in larger size. Female differs from male, and from *H. sticturus*, in rufous crown

and nape, buffy underparts, especially across breast. Voice. Loudsong an accelerating series of short notes, notes becoming more abrupt, like that of *H. sticturus* but perhaps flatter in pitch; differences remain to be studied. Call a clear, moderately long (0.2 seconds) whistle, pitch rising and falling.

**Habitat.** Canopy and subcanopy of humid, lowland evergreen forest, at 100-600 m, mostly below 450 m. Especially in vine tangles of both floodplain-forest and *terra firme* forest growing on rich soils.

**Food and Feeding.** Little published. Feeds on insects, including lepidopteran larvae, orthopterans (Tettigoniidae) and preying mantises (Mantidae); probably also on spiders. Closely associated pair-members, individuals, or family groups forage mostly 20-40 m above ground, sometimes alone, usually with mixed-species flocks of other insectivores. Active but methodical forager, progressing by short hops, with frequent pauses of 1-4 seconds to scan for prey; on zigzag and somewhat erratic path, with numerous abrupt changes of direction and frequent retracing of route, often spending several minutes in a small area before moving on; posture horizontal, habitually flicks both wings shallowly as it forages. Forages mostly in leafy outer branches and crowns of trees, where it perch-gleans most prey from upper and lower surfaces of live leaves and from stems and branches, mostly by reaching out, up or down with quick bill-stabbing motions, or by short horizontal lunges; also makes short (less than 40 cm) fluttering sallies or hover-gleans, usually to overhanging foliage, but rarely hangs or utilizes other acrobatic manoeuvres. Seldom investigates suspended arboreal dead leaves. Smaller prey immediately swallowed, but larger items are bashed repeatedly against branches before swallowing; wipes bill on branch after consuming prey. Not known to follow army ants.

**Breeding.** Nest found in Jul in Peru (near Quebrada Susuari; details previously unpublished): a small pendent cup or bag, exterior constructed from bright green moss, with several wide stems of lichens around bottom, placed 35 m off ground in fork of thin branch in densely leafed section of tree; male seen to carry food to nest, and remain to brood young.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common over much of its range; until recently considered rare, but now known to have been previously overlooked in many areas. Range includes, in Ecuador, the large Yasuni National Park, as well as several privately protected reserves centred around ecotourist lodges (e.g. La Selva, Sacha, Cuyabeno and Kapawi Lodges), Tiputini Biodiversity Station and Jatun Sacha; in Peru, species occurs in forest around Explornapo and ACEER lodges. Range also encompasses extensive areas of intact habitat which, although not formally protected, seem to be at little immediate risk of development. Considered to be highly sensitive to human disturbance.

**Bibliography.** Álvarez (1994), Davis & O'Neill (1986), Hilty & Brown (1986), Isler & Whitney (2002), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Stotz *et al.* (1996), Whitney (2003b), Whitney & Álvarez (1998), Zimmer (2003a).

## 106. Spot-tailed Antwren

### *Herpsilochmus sticturus*

**French:** Grisin givré

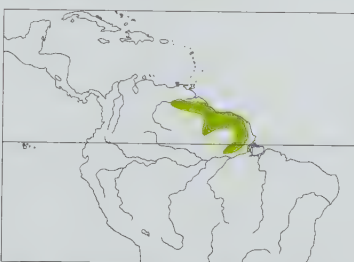
**German:** Salvinameisenfänger

**Spanish:** Tiluchi Colipunteado

**Taxonomy.** *Herpsilochmus sticturus* Salvin, 1885, Bartica and Kamacusa, Guyana.

Forms a superspecies with *H. dugandi* and formerly considered conspecific, but separated on basis of differences in female plumage and in calls. Monotypic.

**Distribution.** E Venezuela (Bolívar E of R Caura and S of R Orinoco), the Guianas and NE Amazonian Brazil (E of R Trombetas).



**Descriptive notes.** 9.5-10.5 cm; 8-9 g. Male has black crown and nape, long pale grey to white supercilium, black laral stripe and postocular stripe; dark grey upperparts with variable black patches, white interscapular patch, black outer scapulars edged white; wings black, flight-feathers edged white posteriorly, coverts tipped white; short tail graduated, black, tips white, long white streak on inner webs of central rectrices; throat and underparts grey, centre of belly white, underwing-coverts white. Distinguished from extremely similar *H. dugandi* by smaller size. Female differs from male in long rufous-cinnamon streaks on crown, buff-tinged wing edgings, paler throat and underparts, underparts tinged buff. Voice.



Loudsong a series of short notes (e.g. 26 notes, 2-8 seconds) that accelerate and become more abrupt, initially rises in pitch and then flattens out, pitch and intensity drop at end. Calls include sharply downslurred "chut" repeated in groups of 2-3, and abrupt (e.g. 0-1 second) muffled whistle, mostly upslurred.

**Habitat.** Canopy and subcanopy of humid lowland evergreen forest, from near sea-level to 550 m. In general, possibly most frequent in gallery and other seasonally flooded forest and in forest growing on nutrient-poor quartzitic or podzolic soils. In Guyana, Surinam and Brazil (Amapá), appears to occur more often in lowland forest near water than does *H. stictocephalus*, but ecological distinctions between the two poorly known; in Venezuela (Bolívar), may occupy slightly drier forest (on poorer soils) than does that species. Often found in vine tangles.

**Food and Feeding.** Little published. Feeds on variety of arthropods; stomachs of birds from Surinam contained beetles (Coleoptera), hemipterans and spiders. Closely associated pair-members, individuals, or family groups forage mostly 15-30 m above ground, sometimes alone, but more often with mixed-species flocks of other insectivores; often found in same mixed flocks as *H. stictocephalus*, and in French Guiana appears to forage closer to ground than latter. Active forager, progressing by short hops, separated by frequent pauses of 1-2 seconds to scan for prey; hitches from side to side, with frequent changes of direction. Most prey perch-gleaned from leaf, stem and vine surfaces, by reaching out, up or down with quick stabbing motions of the bill. Not known to follow army ants.

**Breeding.** Almost unknown. Young fledged in Oct in French Guiana.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout its range; only recently found to be present in Amapá (Serra do Navio). Occurs in several large protected areas, e.g. Canaima and Jaua-Sarisariñama National Parks and Caura Forest Reserve, in Venezuela, and Raleigh Falls-Voltzberg National Park, in Surinam; also, particularly in the Guianas, occurs in extensive areas of intact habitat which are not formally protected but appear to be at little risk of development in near future. Considered to be highly sensitive to human disturbance.

**Bibliography** Cory & Hellmayr (1924), Davis & O'Neill (1986), Haverschmidt & Mees (1994), Hellmayr (1929b), Hilty (2003a), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Parker, Foster *et al.* (1993), Ridgely & Tudor (1994), Robbins (2003a), Sick (1993), Stotz *et al.* (1996), Thiollay (1994), Tostain *et al.* (1992), Whitney (2003a), Whitney & Alvarez (1998), Zimmer (2003a).

## 107. Roraiman Antwren

### *Herpsilochmus roraimae*

**French:** Grisin du Roraima    **German:** Tepuiameisenfänger    **Spanish:** Tiluchi del Roraima

**Taxonomy.** *Herpsilochmus roraimae* Hellmayr, 1903, Mount Roraima, 3500 feet [c. 1060 m], Bolívar, Venezuela.

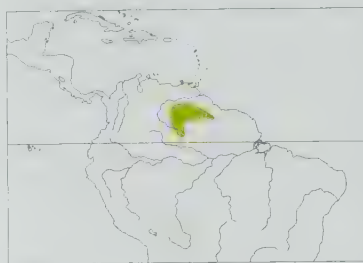
Relationships unclear; possibly closest to *H. dorsimaculatus*. Two subspecies recognized.

#### **Subspecies and Distribution.**

*H. r. kathleenae* Phelps, Jr. & Dickerman, 1980 - tepuis region of SW Venezuela (W & S Bolívar, Amazonas) and adjacent Brazil (extreme N Amazonas).

*H. r. roraimae* Hellmayr, 1903 - tepuis region of SE Venezuela (E Bolívar E of R Caroni), adjacent Brazil (extreme N Roraima) and WC Guyana.

**Descriptive notes.** 12-13 cm. Longer tail than all related species. Male has black crown and nape, long pale grey to white supercilium, black loreal stripe and postocular stripe; dark grey upperparts with variable black patches, many white feather edges, white interscapular patch, black outer



scapulars edged white; wings black, flight-feathers edged white posteriorly, coverts tipped white; tail black, tips white, outer feathers edged white, longer central rectrices with multiple white spots along both webs; throat and underparts grey, with central belly white, underwing-coverts white. Female differs from male in white crown spots, buff-tinged neck side, light buff breast and sides, smaller tail spots. Race *kathleenae* differs from nominate in female having greyer upperparts, pale grey rather than light buff breast and sides. **VOICE.** Loudsong an uncountable series (e.g. 20 notes, 2-1 seconds) of strident, sharply downslurred

notes, flat initially, that decelerates and drops in pitch and intensity at end. Calls include very abrupt "chup" notes, given singly, in pairs and in short series and repeated rapidly, and slightly longer, downslurred "tewp", also irregularly or in rapid, rattle-like series.

**Habitat.** Canopy and subcanopy of humid to wet, evergreen forest and forest borders, at 700-2000 m. Occupies tall forest growing on richer soils on lower and mid-slopes of tepuis; also stunted forest dominated by melastome (*Melastoma*) on poorer soils near the tops, and occurs regularly at ecotones between latter habitat and brushy savanna at higher elevations.

**Food and Feeding.** Little published. Feeds on variety of insects, probably also spiders. Closely associated pair-members, individuals, or family groups forage mostly in leafy outer branches and crowns of canopy trees, to 30 m in tall forest, but as low as 3 m in crowns of shrubs and small saplings in stunted melastome forest. Sometimes alone, more often with mixed-species flocks of other insectivores, especially redstarts (*Myioborus*) and tanagers (Thraupidae). Active forager, working methodically through leafy branches, progressing by short hops, with pauses of 1-2 seconds to scan foliage; also hitches upwards, turning from side to side, along hanging vines in interior portions of canopy. Prey mostly perch-gleaned from live-leaf surfaces (more often tops), sometimes by short, lunging stabs; also sometimes flutter-gleans or hover-gleans from underside of overhanging vegetation and makes occasional short sallies, but seldom employs truly acrobatic manoeuvres in pursuit of prey. Occasionally forages in masses of dead leaves, pulling and picking at curled surfaces. Not known to follow army ants.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Tepuis EBA. Locally fairly common throughout its small range. This region includes several large protected areas, such as Canaima, Duida, La Neblina and Jaua-Sarisariñama National Parks and the Alto Orinoco-Casiquiare Biosphere Reserve, in Venezuela, and Pico da Neblina National Park, in Brazil. Recently, all lands over 800 m and lying S of R Orinoco in Venezuela were declared national monuments, effectively affording all of the tepuis and, hence, most of the range of this species some measure of protection. These remain for the most part "paper reserves", without effective, on-the-ground protection. Species is considered to be highly sensitivity to human disturbance; amount of intact habitat, however, is vast, and current level of threat from human disturbance is low. Major threats to this ecosystem are from human-caused fires, and illegal gold-mining activities.

**Bibliography.** Barnett *et al.* (2002), Cory & Hellmayr (1924), Davis & O'Neill (1986), Hilty (2003a), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Mayr & Phelps (1967), Meyer de Schauensee & Phelps (1978), Parker (2003a), Ridgely & Tudor (1994), Sick (1993), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Zimmer (2003a).







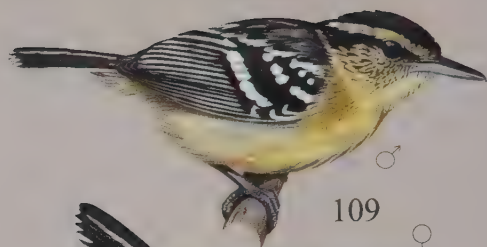


ssp axillaris

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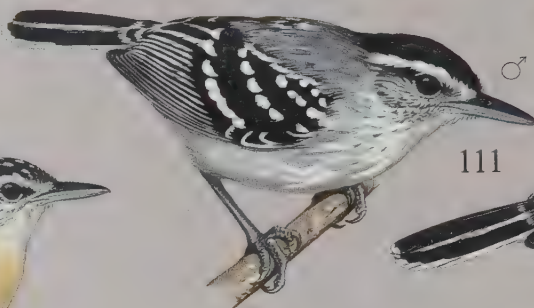
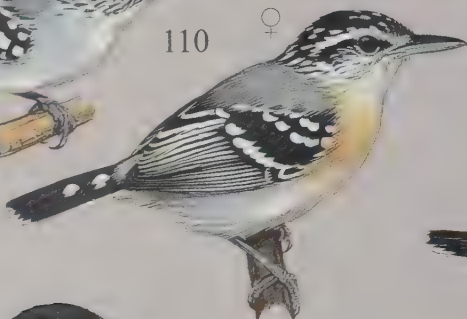
ssp senex



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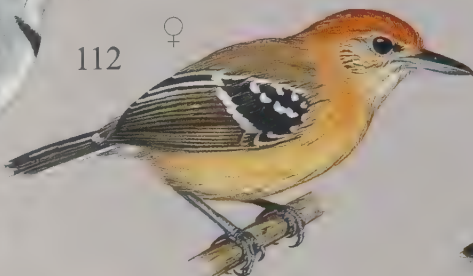


PLATE 55

inches 2  
cm 5



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ssp rufimarginatus

113



ssp frater



ssp quixensis



ssp bicolor



ssp emiliae



ssp nigriventris



114



ssp albicauda



ssp consobrinus





# 108. Yellow-breasted Antwren

## *Herpsilochmus axillaris*

**French:** Grisin à poitrine jaune

**Spanish:** Tiluchi Pechiamarillo

**German:** Gelbkehl-Ameisenfänger

**Other common names:** Yellow-margined Antwren

**Taxonomy.** *Thamnophilus axillaris* Tschudi, 1844, Peru.

Relationships with other species in genus unclear. Plumage distinctions between races *aequatorialis* and *puncticeps* poorly understood. Four subspecies recognized.

### Subspecies and Distribution.

*H. a. senex* Bond & Meyer de Schauensee, 1940 - W & C Andes in W Colombia (Riseralda S to Cauca).  
*H. a. aequatorialis* Taczanowski & Berlepsch, 1885 - E slope of Andes in E Ecuador and N Peru (N of R Maraón).

*H. a. puncticeps* Taczanowski, 1882 - EC Peru S of R Maraón (S to Junin).

*H. a. axillaris* (Tschudi, 1844) - E slope in SE Peru (Cuzco E to Puno).



**Descriptive notes.** 11-12 cm; 10-13 g. Male has black crown spotted white, broken whitish supercilium; side of head mottled blackish and olive-yellow; upperparts olive-grey; flight-feathers very dark grey, tinged olive, edged yellowish-olive, wing-coverts black, tipped and edged white with faint yellow tinge; tail graduated, very dark grey, inner feathers tipped and partially edged white, outer feathers mostly white; throat and underparts pale yellowish-olive, belly centre yellow. Female differs from male in cinnamon-rufous forehead and crown, more olive-buff upperparts, darker olive underparts except belly centre. Race *senex* is paler

above and below, white spots confined more to centre of crown, throat and uppermost breast greyish-white, sharply separated from yellow below; *puncticeps* has upperparts greyer, tinged olive, less white on outer tail feathers, female crown dark olive-grey, tinged cinnamon-rufous; *aequatorialis* is similar to last, white spots on crown restricted to centre, mostly pale yellow below, sides washed olive. **Voice.** Loudsong a rattle-like trill of dry notes (e.g. 30 notes, 2-2 seconds), flat, then decreasing in pitch and intensity while accelerating slightly. Call a short (e.g. 0-2 seconds) downslurred whistle.

**Habitat.** Subcanopy of humid montane evergreen forest and forest borders, at 800-1900 m; 500-1500 m in SE Peru.

**Food and Feeding.** Feeds on variety of insects, probably also spiders. Forages in pairs, with partners closely associated, and in family groups, rarely singly, mostly at mid-heights at forest edge; often in crowns of subcanopy trees, commonly in mid-storey vine tangles, occasionally in crowns of bamboo, sometimes ascending to canopy of tallest trees. Almost always with mixed-species flocks of other insectivores and frugivores. Active forager, progressing by short hops, with frequent deliberate pauses of 1-2 seconds to scan for prey; concentrates foraging in leaves and twigs of leafier outer branches and crowns of trees. Most prey perch-gleaned by reaching out, up or down with quick bill-stabbing motions, or by short horizontal lunges; occasionally hover-gleans from leaves. Not known to follow army ants.

**Breeding.** Almost nothing known. Record of female ready to lay egg in Mar in Peru.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Status not well known; generally considered uncommon and somewhat patchily distributed throughout its range. Region occupied by this species includes a few large protected areas, e.g. Podocarpus National Park and Sumaco Protection Forest, in Ecuador, and Manu National Park and Biosphere Reserve, in Peru. Considered to be of high sensitivity to human disturbance. As with other species restricted to lower Andean slopes, primary threat virtually throughout its range is accelerating deforestation of lower montane forest for human colonization, logging, and agriculture.

**Bibliography.** Cory & Hellmayr (1924), Davis & O'Neill (1986), Hilty (1997), Hilty & Brown (1986), Isler & Whitney (2002), Parker (2003a), Parker & Parker (1982), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schulenberg & Awbrey (1997a), Stotz *et al.* (1996), Taczanowski (1884), Whitney & Álvarez (1998), Zimmer, J.T. (1932c), Zimmer, K.J. (2003a).

# 109. Ancient Antwren

## *Herpsilochmus gentryi*

**French:** Grisin de Gentry

**German:** Gentrys Ameisenfänger

**Spanish:** Tiluchi Antiguo

**Taxonomy.** *Herpsilochmus gentryi* Whitney & Álvarez, 1998, P. J. Lores, Loreto, Peru.

Appears to form a superspecies with *H. stictocephalus*; similarity of vocalizations have suggested to some that both are closely related to the *H. pileatus* group. Monotypic.

**Distribution.** Extreme E Ecuador (SE Pastaza) and N Peru (Loreto W of R Napo and N of R Maraón).

**Descriptive notes.** 10-11 cm; 10-2-11 g. Male has black crown and nape, long yellowish supercilium, black loreal stripe and broad postocular stripe; dark grey upperparts with variable black patches, white interscapular patch, black outer scapulars edged white; wings black, flight-feathers edged white posteriorly, coverts tipped white; tail graduated, black, tips white, long white streak on inner webs of central rectrices; head side, throat and underparts yellowish, tinged olive on sides and flanks. Female differs from male in small orangish spots on forehead, becoming yellowish to white spots on crown, darker below, especially on breast and sides. **Voice.** Loudsong a moderately long series (e.g. 15 notes, 2-1 seconds) that increases and then decreases in pitch and intensity, decelerates throughout, only final notes countable; female song similar but shorter. Calls include abrupt "chup", longer "tink", and a rattle-like series of abrupt notes given in randomly interrupted stream.

**Habitat.** Canopy and subcanopy of humid tropical lowland evergreen forest, to 200 m. Apparently restricted to two types of lowland *terra firme* forest growing on nutrient-poor podzolic and quartzitic soils; in Peru, these known respectively as *irapayal* (canopy height over 40 m, understory domi-



nated by *Lepidocaryum tenue* palms 2-3 m tall) and *varillal* (more stunted forest on purer white-sand soils). In Ecuador, occupies tall *terra firme* forest on the highest, driest ridgetops.

**Food and Feeding.** Little known. Feeds on insects, perhaps particularly adult and larval lepidopterans; probably also on spiders. Closely associated pair-members, individuals, or family groups forage in uppermost strata of forest, mostly 15-40 m above ground, usually with mixed-species flocks. Active but methodical forager, progressing by short hops and flutters, with frequent pauses of 1-2 seconds to scan for prey; often spends several minutes in a given tree, deliberately retracing its routes and frequently changing course; flicks wings shallowly and rapidly, but without obvious tail movements. Foraging activities concentrated in leafy outer branches and crowns (periphery) of trees, where most prey perch-gleaned from live leaves and slender branches by reaching out, up or down with quick bill-stabbing motions, or by short horizontal lunges; occasionally flutters down abruptly in pursuit of flushed prey. Not recorded to investigate dead leaves. Not known to follow army ants.

**Breeding.** Little known. Moulting condition and skull ossification of two juveniles indicated fledging in Feb-Mar, as did family groups with juveniles observed in mid-Apr.

**Movements.** Presumably resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Only recently discovered, and still poorly known; appears to be locally common within its specialized habitat. Primary threat is to habitat type itself, which is patchily distributed in Amazonia and considered particularly vulnerable to perturbation. Recent opening of a paved road through sandy-soil habitats out of Iquitos, in Peru, has encouraged an explosion of human colonization, leading to many of the *varillales* on which this species is largely dependent being clear-cut for a variety of uses; such development, if unchecked, could result in endangerment of not only this but also several other localized species, including *Pernostola arenarum*. Recent creation of Allpahuayo-Mishana Reserved Zone, encompassing c. 27,000 ha of *varillales*, *irapayales* and other forest and palm-swamp habitats, is a critical first step in protection of the highly endemic flora and fauna of the region's sandy-soil forests; continued protection of the integrity of this reserve and prevention of illegal extractive exploitation equally crucial. In Ecuador, this species is known only from vicinity of Kapawi Lodge and surrounding Kapawi Ecological Reserve, which seem secure from habitat destruction. Efforts should be made to locate any additional population centres for this species, and to gain better knowledge of its distribution and population levels.

**Bibliography.** Anon. (1998f, 1998g, 2002b), Isler & Whitney (2002), Ridgely & Greenfield (2001), Stattersfield & Capper (2000), Whitney & Álvarez (1998).

# 110. Todd's Antwren

## *Herpsilochmus stictocephalus*

**French:** Grisin de Todd

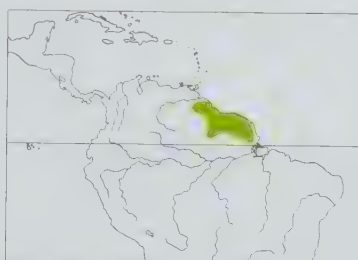
**German:** Toddameisenfänger

**Spanish:** Tiluchi de Todd

**Taxonomy.** *Herpsilochmus stictocephalus* Todd, 1927, Saut Tamanor, French Guiana.

Appears to form a superspecies with *H. gentryi*; similarity of vocalizations have suggested to some that both are closely related to the *H. pileatus* group. Monotypic.

**Distribution.** E Venezuela (E Bolívar E of R Caroni), the Guianas and extreme NE Amazonian Brazil (NE Pará and Amapá).



**Descriptive notes.** 10-11 cm; 8-9.5 g. Male has black top of head, forehead with short white streaks, long white supercilium, black loreal spot and long postocular stripe; light grey upperparts with few small black patches, white interscapular patch, black outer scapulars edged white; wings black, flight-feathers edged white posteriorly, coverts broadly tipped white; tail graduated, black, tips white, outer feathers edged white, white spots and short white streak on inner webs of central rectrices; throat white, underparts lightly washed pale grey, sides slightly darker, underwing-coverts white. Female differs from male in white crown spots,

tinged buff on forehead, light buff breast and sides. **Voice.** Loudsong a moderately long series (13 notes, 2 seconds) similar to that of *H. gentryi*, except initial notes delivered at slower pace (most notes can be counted) and change in pitch over length of song is greater; that of female shorter. Calls include abrupt, downslurred "tup" and even more abrupt, vibrant "chit".

**Habitat.** Canopy and subcanopy of humid tropical lowland and foothill evergreen forest, to 700 m. Compared with *H. sticturus*, appears to be more concentrated in tall, humid forest on better soils, and ranges higher into foothills; rare or absent in savanna forest and seasonally flooded forest where that species is often found; ecological distinctions between them, however, poorly documented.

**Food and Feeding.** Little published. Feeds on various arthropods; stomach samples from Surinam included beetles (Coleoptera), hemipterans and spiders. Closely associated pair-members, individuals, or family groups forage mostly 20-40 m above ground, occasionally lower at forest edge. Alone, or with mixed-species flocks of other insectivores; in some locations found in same flocks as *H. sticturus*, tending to forage at higher levels than latter in French Guiana. Forages mostly in leafy outer branches and crowns of trees and in vine tangles and masses of philodendrons (*Philodendron*) along major trunks. Active but methodical forager, progressing by short hops separated by frequent pauses of 1-2 seconds to scan for prey; hitches from side to side, often in zigzag progression with frequent changes of direction. Most prey perch-gleaned from all surfaces of live leaves, stems and vines, by reaching out, up or down with quick stabbing motions of the bill, or by short horizontal lunges; not particularly acrobatic. Not known to follow army ants.

**Breeding.** Nothing known.

**Movements.** Presumed resident.



**Status and Conservation.** Not globally threatened. Status not well known; generally considered uncommon throughout most of its range. Considered to be of high sensitivity to human disturbance. Range occupied includes some protected areas, e.g. Canaima National Park and Imataca Forest Reserve and El Dorado, in Venezuela, and Brownsberg Nature Park, in Surinam; also extensive areas of intact habitat within, while not formally protected, appear to be at little risk of development in near future.

**Bibliography.** Davis & O'Neill (1986), Haverschmidt & Mees (1994), Hellmayr (1929b), Hilty (2003a), Isler & Whitney (2002), Ridgely & Tudor (1994), Robbins (2003a), Sick (1993), Stotz *et al.* (1996), Thiollay (1994), Jostain *et al.* (1992), Whitney (2003a), Whitney & Álvarez (1998), Zimmer (2003a).

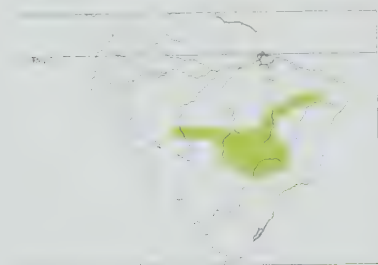
## 111. Large-billed Antwren

### *Herpsilochmus longirostris*

**French:** Grisin à grand bec **German:** Fleckenbrust-Ameisenfänger **Spanish:** Tiluchi Piquilargo

**Taxonomy.** *Herpsilochmus longirostris* Pelzel, 1868. Cuiabá, Mato Grosso, Brazil. Thought to be most closely related to *H. pectoralis* on basis of plumage and distribution, although vocalizations not closely similar. Monotypic.

**Distribution.** Bolivia (locally in N Beni, N Santa Cruz) and SC & NE Brazil (C Mato Grosso E to Tocantins and Goiás, extending NE locally to S Ceará and S Piauí, and S to W Paraná and W São Paulo).



**Descriptive notes.** 12-13 cm; 12-14 g. Male has black crown, long whitish supercilium, blackish lores edged white, thin black stripe behind eye; upperparts grey, interscapular patch black and white (visible), uppertail-coverts black, tipped white; wings black, remiges edged white posteriorly, coverts broadly tipped white; outer tail feathers white, inner feathers black with white tips, central rectrix edged white; underparts white, with tiny black spots on side of breast, greyish sides and flanks; underwing-coverts white. Distinguished from *H. pectoralis* by larger size, no black breast patch. Female differs from male in rufous-cinnamon crown, cinnamon-tinged ear-coverts and upperparts, cinnamon neck, throat and underparts, becoming paler posteriorly, cinnamon-tinged underwing-coverts. Subadult male plumage thought to persist for some time, resembles that of female. **Voice.** Loudsong (e.g. 15 notes, 2-2 seconds) two-parted, with short abrupt notes replaced about half-way through by 4-5 longer notes, final notes delivered more slowly and countable, overall pitch and intensity rise and fall. Calls include distinct, rapidly delivered triplet in which notes become shorter and drop in pitch; also abrupt downsturred note, typical of genus.

**Habitat.** Understorey to canopy of gallery forest, deciduous and semi-deciduous forest, and palm groves, at 150-1100 m; in Bolivia, often found in small forest patches surrounded by *cerrado* and open fields.

**Food and Feeding.** Little published. Feeds on insects, including adult and larval lepidopterans and orthopterans; probably also on spiders. Closely associated pair-members, individuals, or family groups forage mostly 1.5-10 m above ground, less commonly to 15 m; alone, or with mixed-species flocks of other insectivores. Active but methodical forager, progressing by short hops, with frequent pauses of 0.5-3 seconds to scan for prey; tends to cover a tree thoroughly before moving on, following zigzag course with frequent changes of direction and retracing of route; foraging posture generally horizontal, with tail held nearly level with plane of body, and wings flicked shallowly and constantly. Concentrates in leafier portions of subcanopy and understorey, but also spends considerable time working along bare woody vines. Prey usually perch-gleaned from both surfaces of live leaves, from leaf petioles, and from vine and branch surfaces, by reaching out, up or down with quick bill-stabbing motions, or by short lunging stabs; regularly makes short (15-30 cm) diagonal sallies to underside of vegetation; also flutters abruptly downwards to pursue dislodged prey (particularly Orthopterans and moths). Seldom investigates suspended dead leaves, but will, on occasion, drop to the ground to take prey from surface of leaf litter. Smaller items consumed immediately; larger prey bashed repeatedly on branches before being swallowed; almost invariably wipes the bill vigorously on branch after each prey capture. Not known to follow army ants.

**Breeding.** Not well known. In Brazil, gonadal condition of birds in Paraná and S Mato Grosso suggests breeding in Sept-Dec, at beginning of rainy season; pair carrying nesting material in Sept in Goiás. One described nest was a small cup 6 cm in total length, 5 cm wide, 8 cm in height, with egg-chamber 6 cm deep, composed of several leaves (especially of the bamboo *Guadua spinosissima*), spades of an unidentified grass, filaments of the fungus *Marasmius*, kapok and radicles, placed 1-5 m above ground and either set in or hanging from fork concealed among branches of lauraceous tree *Ocotea suaveolens*; said to be similar to nests of *Thamophilus* species.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common over most of its range; in Brazil, particularly common in appropriate habitat along entire length of the Transpantaneira road in Mato Grosso. Range includes several large protected areas, e.g. Das Emas, Brasília, Chapada dos Guimarães and Pantanal Mato-grossense National Parks and Serra das Araras Ecological Station, in Brazil, and Noel Kempff Mercado National Park, in Bolivia. Considered to be of medium sensitivity to human disturbance.

**Bibliography.** Bates *et al.* (1992), Cintra & Yamashita (1990), Cory & Hellmayr (1924), Davis & O'Neill (1986), Isler & Whitney (2002), Marini, Motta-Júnior *et al.* (1997), Marini, Pereira *et al.* (1997), do Nascimento *et al.* (2000), Parker (2003a, 2003b), Parker & Rocha (1991), Ridgely & Tudor (1994), Sick (1955, 1993, 1997), Stotz *et al.* (1996), Straube *et al.* (1992), Whitney *et al.* (2000), Zimmer (2003a).

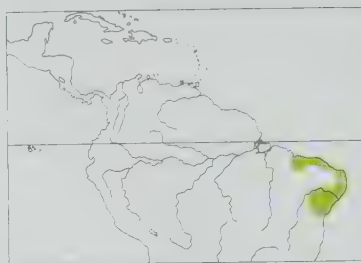
## 112. Pectoral Antwren

### *Herpsilochmus pectoralis*

**French:** Grisin à collier **German:** Brustband-Ameisenfänger **Spanish:** Tiluchi Pectoral

**Taxonomy.** *Herpsilochmus pectoralis* P. L. Sclater, 1857, no locality = Bahia, Brazil. Thought to be most closely related to *H. longirostris* on basis of plumage and distribution, although vocalizations not closely similar. Monotypic.

**Distribution.** NE Brazil locally from NE Maranhão E to Rio Grande do Norte, S to Sergipe and NE Bahia.



**Descriptive notes.** 11-12 cm. Male has black crown spotted white around edges, long whitish supercilium, blackish lores edged white, narrow black stripe behind eye; upperparts grey, interscapular patch black and white (visible), uppertail-coverts black, tipped white; wings black, remiges edged white posteriorly, coverts broadly tipped white; outer tail feathers white, inner feathers black with white tips, central rectrix edged white; underparts white, black patch on breast, grey sides and flanks; underwing-coverts white. Distinguished from *H. longirostris* by black breast patch, smaller size. Female differs from male in rufous crown,

brownish-olive upperparts, buffish flight-feather edges, buff neck side and underparts, brightest on breast. **Voice.** Loudsong a moderately long (e.g. 2 seconds) complex series that sounds two-parted though pace near-constant, begins with long "caa" notes that shorten while first rising and then dropping in pitch and intensity, then lower-pitched harmonic becomes more dominant and gradually rises in pitch and intensity while notes continue to shorten. Call a flat "caa", like initial note of loudsong.

**Habitat.** Recorded from gallery forest and deciduous forest in Maranhão, wooded *restinga* in Rio Grande do Norte, and tall *caatinga* woodland and closed old secondary forest in Bahia; from near sea-level to 850 m. Historically, recorded from dry palm woodland on banks of middle R Itapicuru (Maranhão). In recent surveys W of Jeremoabo (Bahia), found in tall *caatinga* woodland, largely deciduous but with scattered broadleaf evergreen trees taller than 15 m, and with dense understorey and abundant terrestrial bromeliads, cacti and other stem-succulents (possibly *Euphorbia*). Utilizes all levels of forest, from understorey to canopy.

**Food and Feeding.** Little published. Feeds on insects, including lepidopteran larvae and orthopterans, e.g. katydids (Tettigoniidae); probably also takes spiders. Closely associated pair-members, individuals, or family groups forage mostly 2.5-7 m above ground, sometimes to 12 m, rarely dropping down to ground level; usually concentrating in crowns of understorey trees and shrubs and in mid-levels and subcanopy of taller emergent trees. Alone, or often with mixed-species flocks of other insectivores. Active but methodical forager, progressing by short hops, with frequent pauses of 1-5 seconds to scan for prey; hitches from side to side as it sets an erratic course with frequent directional changes and retracing of routes, frequently spending several minutes in a single tree before moving on; works all zones of trees, inner portions as well as peripheral branches, and bare branches as well as densely leaved ones; foraging posture generally horizontal, and wings flicked shallowly and constantly, tail occasionally lowered slowly and then flicked quickly upwards. Most prey perch-gleaned from live foliage (both tops and undersides of leaves in nearly equal proportions) and bare vine and branch surfaces, by reaching out, up or down with quick stabbing motions of the bill, or by short horizontal lunges; also frequently gleans from bark crevices of trees and from various stem-succulents (cacti, *Euphorbia*); often makes short (15-30 cm) fluttering sallies to undersides of leaves and branches, and sometimes flutters down abruptly to pursue dislodged prey (particularly katydids). Prey capture usually accompanied by audible snap of mandibles; smaller items consumed immediately, larger prey bashed repeatedly against branches before swallowing. Not known to follow army ants.

**Breeding.** Little known. Two females with well-developed ovaries in late Aug in Bahia, and family party with independent immatures recorded in late Sept.

**Movements.** Presumed resident.

**Status and Conservation.** **VULNERABLE.** Has highly fragmented range; currently known from only a few scattered sites, only one of which, the small Itabaiana Reserve, in Sergipe, is formally protected. The taller *caatinga* and deciduous woodlands in which this species is found are rapidly being destroyed. It persists at several sites in Bahia which are under fairly intense grazing pressure by cattle and goats; areas near Jeremoabo with reasonably dense mid-storey and understorey vegetation (containing thickets with interlocking branches) still supported reasonable densities of this antwren as recently as Jan 2000, despite being dissected by numerous livestock trails. More immediate threat is rampant cutting of understorey vegetation for firewood and for charcoal production; nearby areas which harboured territories in 1996 and 1997 have subsequently suffered extensive clearance of understorey vegetation and no longer support the species. Population in the *restinga* woodlands of Rio Grande do Norte may be important, but remains to be censused. Systematic surveys needed in order to determine true extent of the species' range and population, as well as the best locations for creation of multiple small reserves.

**Bibliography.** Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), Davis & O'Neill (1986), Hellmayr (1929b), Isler & Whitney (2002), Parrini *et al.* (1999), Ridgely & Tudor (1994), Sick (1993, 1997), Stattersfield & Capper (2000), Teixeira, Otcho *et al.* (1993), Wege & Long (1995), Zimmer (2003a).

## 113. Rufous-winged Antwren

### *Herpsilochmus rufimarginatus*

**French:** Grisin à ailes rousses **German:** Rotschwungen-Ameisenfänger **Spanish:** Tiluchi Alirrufo

**Taxonomy.** *Myiothera rufimarginata* Temminck, 1822, Rio de Janeiro, Brazil.

Relationships with other members of genus unclear. Differences in morphology and vocalizations suggest that more than one species may be involved; re-examination required. Four subspecies currently recognized.

**Subspecies and Distribution.**

*H. r. exiguus* Nelson, 1912 - E Panama (Darién), NW Colombia (Córdoba, Bolívar) and W Ecuador (Esmeraldas, Los Ríos).

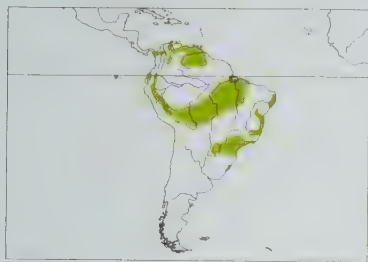
*H. r. frater* P. L. Sclater & Salvin, 1880 - N & S Colombia (base of Andes in La Guajira, Boyacá, Meta, Putumayo) S to E Peru and N Bolivia (Pando and La Paz E to Santa Cruz), also N & S Venezuela (Zulia E to Monagas, and Bolívar and N Amazonas), extreme S Guyana, and extreme N and SC Amazonian Brazil (N Roraima, and from S Pará and W Maranhão SW to Rondônia and N Mato Grosso).

*H. r. scapularis* (Wied, 1831) - E Brazil (coastal Paraíba S to Alagoas, and in E Bahia, E Minas Gerais and Espírito Santo).

*H. r. rufimarginatus* (Temminck, 1822) - E Paraguay (E of R Paraguay), extreme NE Argentina (Misiones) and SE Brazil (São Paulo, Rio de Janeiro, Paraná, NE Santa Catarina).

**Descriptive notes.** 10-12.5 cm; 10-12.5 g. Male nominate race has black crown, long whitish supercilium, black loreal streak and long postocular streak; side of head mottled black and pale yellow or white; upperparts olive-grey, variably patched black, outer scapulars edged white, uppertail-coverts yellow; flight-feathers dark grey, tinged olive-brown, edged bright cinnamon-rufous, coverts black, tipped white; graduated tail dark grey, tipped white, outer feathers white;





throat and underparts light yellow, sides tinged olive; underwing-coverts pale yellow. Female differs from male mainly in rufous forehead, rufous-brown crown, olive-brown back. Race *frater* is like nominate but has greyer back with more black patches, throat white, underparts very pale creamy yellowish; *scapularis* resembles previous; *exiguus* is smallest, male upperparts almost pure grey, wing edgings deep amber, female upperparts olive-grey. Voice. Loudsong of race *exiguus* short (e.g. 1-3 seconds) but complex, starts with flat, evenly paced series (e.g. 6 notes) that accelerates and drops in pitch before being

overtaken by rapid series of higher-pitched notes that decelerate; *frater* somewhat similar, except initial series of notes longer and drops in pitch, second part of song short and notes become raspy; *scapularis* (nominate race similar in pattern) starts with relatively clear whistles accelerating into rattling trill that decelerates, overall series rises and falls slightly in pitch. Calls include short raspy bark, short clear whistles, abrupt downslurred notes, and short (e.g. 0-4 seconds) rattle in which low-pitched initial notes followed by higher descending notes; calls appear to differ among populations.

**Habitat.** Lowland and foothill forests and forest borders, to 1500 m; throughout range, typically in interior vine tangles in mid-storey and subcanopy, but also in canopy of tallest trees and second growth. In Brazil, occupies interior of humid evergreen forest, less often edge, in Atlantic Forest region, locally also in taller *restinga* woodland growing on white-sand soils; primarily in river-edge forest in S Amazonia, but also in semi-deciduous *serra* forest growing on rocky, poor soils, and in borders of humid, tall *terra firme* forest. In Venezuela, mostly in humid foothill evergreen forest or gallery forest and second growth N of R Orinoco, and in dry (deciduous) to humid lowland and foothill forest S of river. Mostly in borders of humid foothill evergreen forest and in second-growth woodland in Ecuador and Peru.

**Food and Feeding.** Little published. Feeds on variety of insects, including lepidopteran larvae and orthopterans, and spiders; berries also recorded. Stomach contents of two specimens from Pará included orthopterans (Tettigoniidae), beetles (Curculionidae), hemipterans, and spiders; single stomach from Panama contained beetles (Chrysomelidae), ground bugs (Lygaeidae), homopterans, earwigs (Dermaptera), and spiders. Observed feeding on berries of mistletoe (*Rapanea*). Closely associated pair-members, individuals, or family groups forage mostly 8-30 m above ground, but regularly lower, to 3 m, at edges of lower-stature sandy-soil forest. Alone, or frequently with mixed-species flocks of other insectivores, pairs often join mixed flocks briefly as these pass through their territory, then lag behind and drop out as flock moves on. Active but methodical forager, progressing by short hops separated by frequent pauses of 1-3 seconds to scan for prey; concentrates activities in leafiest parts of canopy and subcanopy, especially in masses of vine tangles near trunk, but also in crown and periphery of trees where overlapping layers of leafy branches, vines and/or bamboo form dense mats or sprays of vegetation; works these areas thoroughly, in zigzag progression with frequent changes of direction and retracing of routes, routinely spending many minutes in a single tree or tangle before moving on. Most prey perch-gleaned from live leaves (more often from their tops), by reaching out, up or down with quick bill-stabbing motions or by short horizontal lunges; also makes frequent short (less than 30 cm) fluttering sallies to underside of vegetation; occasionally hangs head first to reach prey, but in general does not employ acrobatic manoeuvres; often flutters abruptly downwards, sometimes for several metres, in pursuit of dislodged prey. Small items swallowed immediately; larger prey bashed repeatedly against tree limbs before being swallowed. Not known to follow army ants.

**Breeding.** Nothing known.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Considered to be fairly common to common throughout most of range. Numerous protected areas exist in most countries in which it occurs, e.g. Darién National Park, in Panama, Henri Pittier and Guatopo National Parks, in Venezuela, Muriel Ecological Reserve, Sooretama Biological Reserve, Serra do Mar and Cristalino State Parks, and Tijuca and Iguaçu National Parks, in Brazil, and Iguazú National Park, in Argentina; also extensive tracts of intact habitat which are not formally protected, but are seemingly at little immediate risk of development. The species' capacity to exploit a number of different habitats, including forest edge and second-growth woodland, renders it less vulnerable to disturbance than are many other antbirds.

**Bibliography.** Aleixo (1999), Alverson *et al.* (2001), dos Anjos (2001a), Berla (1946), Cândido (2000), Cory & Hellmayr (1924), Cox *et al.* (1992), Davis & O'Neill (1986), Foster *et al.* (1994), Gonzaga (2001), Hackett & Rosenberg (1990), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Killeen & Schulenberg (1998), Krügel & dos Anjos (2000), Meyer de Schauensee & Phelps (1978), Moskovits *et al.* (1985), Motta-Junior & Vasconcello (1996), Parker & Carr (1992), Pineschi (1990), Remsen *et al.* (1986), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Schubart *et al.* (1965), Scott & Brooke (1985), Sick (1993), Stotz (1990b), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Taylor (1995), Terborgh & Weske (1969), Wetmore (1972), Zimmer, J.T. (1932c), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997).

## Genus *MICRORHOPIAS* P. L. Slater, 1862

### 114. Dot-winged Antwren

#### *Microrhopias quixensis*

**French:** Grisé étoilé **German:** Tropfenflügel-Ameisenfänger **Spanish:** Hormiguero del Quijos

**Taxonomy.** *Thamnophilus quixensis* Cornalia, 1849, eastern Ecuador.

Relationships uncertain; extensive study of morphological and vocal characters indicated close relationship with *Formicivora*; genetic study in which latter genus not included, however, suggested closeness to "stipple-throated antwren assemblage" of *Myrmotherula*. Races *boucardi* and *virgatus* intergrade in Honduras; future research may indicate that they should be merged. On basis of vocal as well as plumage differences, possibly also differences in habitat preferences, it is very likely that some other races merit elevation to species rank; e.g. *emiliae* suggested as a separate species; further study required. Ten subspecies recognized.

#### Subspecies and Distribution.

*M. q. boucardi* (P. L. Slater, 1858) - E Mexico (E Veracruz and NE Oaxaca E to S Campeche and S Quintana Roo), Belize, E Guatemala and N Honduras.

*M. q. virgatus* (Lawrence, 1863) - SE Honduras and E Nicaragua S to W Panama (E to E Panamá and W San Blas, locally on Pacific slope).

*M. q. consobrinus* (P. L. Slater, 1860) - E Panama (E San Blas, Darién), W & N Colombia and W Ecuador.

*M. q. microstictus* (Berlepsch, 1908) - NE Amazonian Brazil (N Roraima, extreme NE Pará, Amapá), S Guyana, Surinam and French Guiana.

*M. q. quixensis* (Cornalia, 1849) - S Colombia (Putumayo, Caquetá), E Ecuador and NE Peru (N Loreto N of R Marañón and R Amazon).

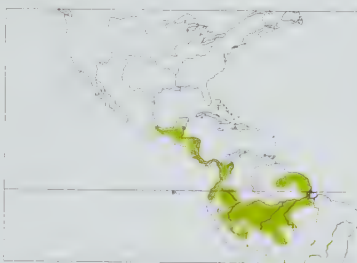
*M. q. intercedens* J. T. Zimmer, 1932 - lowlands of C Peru (S of R Amazon and along both banks of R Ucayali) and SW Amazonian Brazil (E to R Madeira).

*M. q. nigriventris* Carriker, 1930 - E slope and base of Andes in C Peru (San Martín S to N Cuzco).

*M. q. albicauda* Carriker, 1932 - SE Peru (S Cuzco, SE Ucayali, Madre de Dios, Puno) and adjacent N Bolivia (Pando).

*M. q. bicolor* (Pelzeln, 1868) - SC Amazonian Brazil (R Madeira E to R Tapajós and R Teles Pires, S to Rondônia and N & W Mato Grosso).

*M. q. emiliae* Chapman, 1921 - R Tapajós E to R Tocantins and S to extreme N Mato Grosso (NE of R Teles Pires).



**Descriptive notes.** 11-12 cm; 7.5-11.5 g. Long tail graduated. Male nominate race is mostly black; partly concealed white interscapular patch extending to rump; flight-feathers dark grey, tinged brown, greater wing-coverts with large white tips, remaining coverts with small white tips; tail feathers (except central ones) with white tips, becoming progressively larger to outside; sometimes a few white shaft streaks on flanks; axillaries, underwing-coverts and inner margins of flight-feathers white. Female is like male except blackish-grey, throat black, remaining underparts rufous-chestnut, darkest

on breast. Males of other races differ from nominate mainly in size of white wing-covert and tail spots, and plumage of female: *boucardi* has tail tips smaller, female throat and underparts rufous-tinged cinnamon; *virgatus* is like last, but female cinnamon-rufous below; *consobrinus* is distinctly smaller in size, white tail tips larger, female entirely rufous-chestnut to rufous below; *microstictus* has wing-covert spots small, female throat and underparts rufous, flanks mixed with dark grey; *nigriventris* has primary wing-coverts extensively white, outer tail feathers almost entirely white, female deep chestnut on breast, remaining underparts black; *albicauda* has greater wing-covert spots small, white tips of tail feathers longer, outer rectrices almost entirely white, female crown and anterior upperparts dark grey, cinnamon-rufous below, flanks grey; *bicolor* has white tail tips extensive, female upperparts dark grey, throat and underparts rufous; *intercedens* is similar to previous, but female blackish-grey above; *emiliae* has white tail tips smaller, female lower throat and upper breast chestnut-rufous, remaining underparts black. Voice. Loudsong an accelerating series of notes that shorten in length, varies among races in such characteristics as number of notes, duration, overall pace, and especially frequency pattern, some songs rise and fall in frequency, others are flat or fall or rise throughout, differences among taxa remain to be determined through careful analysis; also much sexual and individual variation within populations. Most common call a short, sharp, mostly downslurred note, often repeated over and over but at irregular pace; other calls include downslurred whine, downslurred complex, raspy call, and jumble of "chip" and "see" notes.

**Habitat.** Mid-storey of humid lowland and foothill evergreen-forest borders, light-gaps within primary forest, and adjacent second-growth woodland, from near sea-level to 1100 m (lower in some parts of range). Mostly in dense edge and second-growth vegetation, and usually not in interior of forest except where light-gaps have fostered abundant vine tangles in mid-storey; in most regions, found especially in vine tangles and dense mats of vegetation around edges of forest clearings, particularly around treefalls. In parts of Central America (e.g. Guatemala, Belize) also occurs in low, dense, semi-deciduous forest, which often characterized by mats of vine vegetation overtopping the understorey trees and shrubs; in some areas (e.g. Costa Rica, Panama) often ventures into the shaded, semi-open of regenerating cacao and guava plantations. In some regions of South America (e.g. W Ecuador, SE Peru, parts of Brazil) is strongly tied to stands of bamboo and/or *várzea* forest. In Alta Floresta region of Mato Grosso, occupies mainly vine tangles in *terra firme* light-gaps W of R Teles Pires (race *bicolor*), but E of the river restricted to stands of *Guadua* bamboo (*emiliae*).

**Food and Feeding.** Feeds on a variety of insects, including orthopterans, hemipterans, and adult and larval lepidopterans; also on spiders. Stomach contents of specimens from Surinam included hemipterans, homopterans, and beetles (Chrysomelidae). Forages as closely associated pair-members or family groups, rarely singly, mostly 3-10 m above ground, less commonly down to 1 m or as high as 15 m; mean foraging height from 33 foraging observations at Cocha Cashu, in Peru, was 8-91 m. Alone, or with mixed-species flocks of other insectivores; typically, joins mixed flocks briefly as these pass through its territory, but pairs and families usually drop out as flocks move on. Concentrates activities in dense foliage, particularly in vine tangles along trunks and major limbs and in dense thickets, but also in leafy crowns of understorey trees and bamboo. Forages very actively, frequently fluttering and posturing with half-drooped wings (habitually flicked) and fanned tail, progressing by short hops and fluttery flights with frequent abrupt changes of direction; hitches up vertical vines and stems, often moving rapidly up and down in vertical profile. Perch-gleans prey from tops and bottoms of live leaves, leaf petioles and stem and vine surfaces; *virgatus* prefers very large leaves, particularly those of philodendrons (*Philodendron*), *emiliae* more often gleans from small leaves of *Guadua* bamboo. Reaches out, up or down (often with legs extended) with quick stabs of the bill; also, often makes short, upward-directed jump-strikes or horizontal lunges, and short (less than 40 cm) hover-gleaning sallies; occasionally hangs head first or clings laterally to glean from vegetation. Rarely attends army-ant swarms; at such times, descends to the ground and takes prey directly from ground.

**Breeding.** May-Jul in Mexico and Belize, Jan-Aug in Costa Rica and Feb-Jul in Panama; probably Feb-Sept in Surinam, and adults carrying food in bill in Mar-Apr in French Guiana; single record of adult male feeding juvenile male in Feb in E Ecuador. Nest, constructed by both sexes, a pouch or deep cup composed of partly decayed leaves, fastened together with cobwebs and fine dark fibres, also sparsely lined with latter material, attached by rim to forked branch and slender twigs 1-12 m (mostly 4-7 m) above ground among foliage. Normal clutch 2 eggs, white, spotted all over with brown, lilac-grey, dark purple-grey and/or dark violet-brown, spots more heavily clustered on larger end; incubation by both parents during day, only female at night; brooding and feeding of



nestlings shared by both parents. Of 11 nests followed in one study in Panama, 4 fledged young, 6 were preyed on, and 1 failed for unknown reasons.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Fairly common but patchily distributed throughout most of its extensive range. This includes numerous large protected areas, examples of which are: Tikal National Park, in Guatemala; Chan-Chich, in Belize; Braulio Carrillo, La Amistad and Corcovado National Parks and Carara Biological Reserve, in Costa Rica; Soberania and Darién National Parks and Comarca Kuna Yala Indigenous Reserve, in Panama; Raleigh Falls-Voltzberg National Park, in Surinam; Yasuni National Park, Río Palenque Scientific Centre and Jatun Sacha Biological Station, in Ecuador; Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru; and Serra do Divisor, Pacaás-Novos and Tapajós National Parks and Cristalino State Park, in Brazil. Existing parks and reserves are adequately distributed throughout the species' range, ensuring protection of all subspecies. Considered to be of medium sensitivity to human disturbance.

**Bibliography.** Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Blake & Loiselle (2001), Cody (2000), Cory & Hellmayr (1924), David & Gosselin (2002), Dick *et al.* (1984), Eisenmann (1952), England (2000), Foster *et al.* (1994), Gonzaga (2001), Gradwohl & Greenberg (1980, 1982a), Greenberg (1981b), Greenberg & Gradwohl (1980, 1983, 1985, 1986, 1997), Gyldenstolpe (1951), Hackett & Rosenberg (1990), Haverschmidt & Mees (1994), Hellmayr (1929b), Hilty (1997), Hilty & Brown (1986), Howell, S.N.G. & Webb (1995a), Howell, T.R. (1957), Isler & Whitney (2002), Johnson (1953, 1954), Jones (1977), Kratter (1997a), Monroe (1968), Munn (1984, 1985), Munn & Terborgh (1979), O'Neill (1974), Oren & Parker (1997), Parker (2003a), Parker & Carr (1992), Remsen (1986), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robinson *et al.* (2000), Rosenberg (2003), Russell (1964), Schönwetter & Meise (1967), Servat (1996), Sick (1993), Skutch (1969c), Slud (1960, 1964), Stiles & Skutch (1989), Stotz (1990b, 2003), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Tashian (1952), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1994), Tostain (1980a, 2003), Tostain *et al.* (1992), Wetmore (1972), Wiley (1971), Willis (1980), Willis & Eisenmann (1979), Zimmer, J.T. (1932c), Zimmer, K.J. (2003a), Zimmer, K.J., Parker *et al.* (1997).











# Genus *FORMICIVORA* Swainson, 1824

## 115. Narrow-billed Antwren

### *Formicivora iheringi*

**French:** Grisin à bec étroit

**Spanish:** Hormiguerito Picofino

**German:** Schiefergrauer Ameisenfänger

**Taxonomy.** *Formicivora iheringi* Hellmayr, 1909, Senhor do Bonfim, Bahia, Brazil.

Relationships unclear. Recent extensive morphological and vocal study indicated that it is not closely related to others of genus, and that it should perhaps, for the time being, be placed in a separate monotypic genus; further research required. Monotypic.

**Distribution.** E Brazil in interior E Bahia and NE Minas Gerais.



**Descriptive notes.** 11-12 cm; 1 male 8-2 g. Male is mostly dark grey; blackish-grey on wings and tail, wing-coverts and outer tail feathers tipped white; centre of throat and breast black, flanks white, undertail-coverts indistinctly barred white. Female is olive-brown above, contrastingly greyer on crown, shading to reddish yellow-brown on uppertail-coverts; pale supercilium, diffuse whitish eyering; wings dull brown, flight-feathers edged reddish, coverts edged pale cinnamon; tail reddish-brown; yellow-ochre below, paler, nearly whitish, in centre of belly, little white on flanks. **VOICE.** Loudsong a countable series

(e.g. 19 notes, 8 seconds) of emphatic, evenly paced, downslurred whistles, notes start a little softer, then maintain intensity. Calls include abrupt notes, often in pairs or triplets, and short rattle.

**Habitat.** Understorey and mid-storey of tropical deciduous hill forest, from 250 m to 1050 m. In Jequié-Boa Nova region (Bahia) occupies vine-rich *mata-de-cipó* forest, which has scattered larger trees above a uniform dense layer of mid-storey trees and vines, and relatively open understorey, with numerous lianas and scattered patches of huge terrestrial bromeliads.

**Food and Feeding.** Little published. Feeds on variety of insects, including orthopterans (Tettigoniidae) and adult and larval lepidopterans; probably also on spiders. Closely associated pair-members, individuals, or family groups forage 0-12 m above ground, mostly at 1-5-8 m, generally alone, sometimes in loose association with mixed-species flocks. Active but methodical forager, progressing by short hops, separated by pauses of 1-2 seconds to scan; concentrates foraging in shaded open branches and woody vine tangles in central portions of trees, generally avoiding areas of dense foliage; hitches up hanging vines and vertical branches, sometimes turning from side to side with each hop, but just as commonly maintaining a single (nearly vertical) orientation, more like a piculet (*Picumnus*); when working along horizontal and inclined limbs, routinely leans far forwards to peer under branches in manner reminiscent of many *Tangara* tanagers; follows zigzag progression, with frequent changes of direction, and often abruptly drops to lower perch, only to start hitching upwards again. Posture generally horizontal; shallowly flicks both wings constantly, and regularly raises tail slowly to perhaps 10 degrees above plane of body before rapidly flicking it downwards in 20-30 degree arc. Of more than 200 foraging observations in Bahia, over 60% of attack manoeuvres were targeted at bare branch, vine or stem surfaces, including leaf petioles; remaining foraging substrates were, in decreasing order of importance, live leaves (upper and lower surfaces), suspended arboreal dead leaves, small bromeliads and clumps of moss along trunks, and hanging clumps of *Tillandsia*; curled dead leaves were regularly investigated (c. 15% of all manoeuvres) but just as frequently passed by without inspection. When investigating dead leaves, typically probes the interior lightly with its bill, sometimes while clinging to leaf itself, but rarely manipulates or damages it, and seldom spends more than 5 seconds at a single dead leaf. Perch-gleans most prey by reaching out, up or down with quick bill-stabbing motions; frequently hangs acrobatically, head first, to reach prey below, and also clings in manner of a tit (*Paridae*) to branch, vine or leaf margins and hanging clumps of *Tillandsia* or moss; regularly makes short (less than 30 cm) sallies or jump-strikes to glean prey from undersides of overhanging vines or leaves; also regularly makes fluttering pursuit-flights after flushed prey (particularly moths). Rarely, recorded as briefly attending swarms of army ants (*Eciton burckhelli*).

**Breeding.** Little known. Three birds had testes dormant or only slightly enlarged in Oct (Bahia) and Dec (Minas Gerais), indicating that breeding does not occur during local dry season.

**Movements.** Presumed resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species; present in Deciduous Forests of Bahia EBA. Uncommon to fairly common within its small range; total population thought to number between 2500 and 10,000 individuals, and assumed to be declining as a result of ongoing habitat destruction. Primary deciduous forest in Bahia and NE Minas Gerais is being rapidly cleared for cattle pastures and coffee plantations, and remaining fragments subject to disturbance by livestock and exploitation of trees for firewood. Nevertheless, substantial habitat harbouring viable populations of this species still exists in Jequié-Boa Nova region (Bahia) and at Almenara in Jequitinhonha Valley (Minas Gerais), although neither area is formally protected. There have been calls for establishment of a forest reserve of *mata-de-cipó*; this could be set up in conjunction with an experimental agricultural station that is needed on S Bahian plateau because of its distinctive climate and soils, or as a community-level conservation initiative. Creation of such a reserve in Jequié-Boa Nova region would also help to protect the Endangered *Rhoportis ardesiacus*.

**Bibliography.** Bernardes *et al.* (1990), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), Gonzaga (2001), Hackett & Rosenberg (1990), Isler & Whitney (2002), King, W.B. (1978/79), Machado *et al.* (1998), Neto *et al.* (2001), Parrini *et al.* (1999), Ridgely & Tudor (1994), Sick (1993, 1997), Sick & Teixeira (1979), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Teixeira (1987a), Wege & Long (1995), Whitney (1996), Willis (1985a), Willis & Oniki (1981a), Zimmer (2003a).

## 116. White-fringed Antwren

### *Formicivora grisea*

**French:** Grisin de Cayenne

**Spanish:** Hormiguerito Coicorita

**German:** Braunrücken-Ameisenfänger

**Other common names:** Black-breasted Antwren

**Taxonomy.** *Turdus griseus* Boddaert, 1783, Cayenne, French Guiana.

Morphological, vocal and molecular studies indicate that, with exception of *F. iheringi*, all species placed in current genus form a well-defined group. Recent extensive morphological and vocal study suggests that closest relatives of present species are *F. rufa* and *Stymphalornis acutirostris*; close relationship with former also supported by genetic study. Geographical differences in voice and striking differences in female plumages strongly suggest that some races represent separate species; further study required. On other hand, *fumosa* possibly indistinguishable from *intermedia*. Described form *delizae* known from single specimen from Rio de Janeiro (Brazil); possibility that it represents a distinct race considered unconfirmed. Eight subspecies recognized.

**Subspecies and Distribution.**

*F. g. alticincta* Bangs, 1902 - Pearl Is, S Panama.

*F. g. hondae* (Chapman, 1914) - NW Colombia (Atlántico S to N Antioquia and Bolívar, S in Magdalena Valley to Huila).

*F. g. intermedia* Cabanis, 1847 - N Colombia (Magdalena, La Guajira, César) and N Venezuela (N Zulía E to Sucre and Monagas, including Margarita I); also Chacachacare I, off Trinidad.

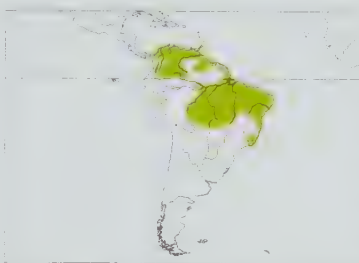
*F. g. tobagensis* Dalmás, 1900 - Tobago.

*F. g. fumosa* (Cory, 1913) - along N base of Andes in NE Colombia (E Norte de Santander) and Venezuela (S Zulía and Trujillo S to Táchira).

*F. g. rufiventris* Carriker, 1936 - E Colombia (Meta and Guainía S to Caquetá) and S Venezuela (W Amazonas except extreme N).

*F. g. orenocensis* Hellmayr, 1904 - S Venezuela (S of R Orinoco in Bolívar and extreme N Amazonas).

*F. g. grisea* (Boddaert, 1783) - Guyana, coastal Surinam and French Guiana, and N & E Brazil (drainage of R Branco, lower R Negro E to Amapá and S of R Amazon, E from R Madeira apart from few scattered records W of it to W Amazonas, and S to Mato Grosso, Goiás, Bahia and, locally, to E Minas Gerais and N Rio de Janeiro).



**Descriptive notes.** 12-13 cm, *alticincta* 11-12 cm; 8-12 g. Male nominate race has white supercilium, dark greyish-brown crown and upperparts, crown with blackish feather centres, outer scapulars edged white, concealed white interscapular patch; wings brownish-black, coverts tipped white; graduated tail black, sides white, small white tips on central feathers, white tips increasing in size towards outer rectrices; white of supercilium extending in a line to breast side and broadening on flanks; head side, throat and remaining underparts black, underwing-coverts white. Female

resembles male above, except supercilium tinged buff, hidden white interscapular patch reduced or absent, wings browner, side of head mottled blackish and pale buff-white; cinnamon below, whiter on throat and belly, breast tinged tawny. Subadult male initially resembles female, later acquires black throat and breast before complete adult male plumage. Races vary in depth of colour above, extent of white on tail tips, darkness of male crown-feather centres, but mainly in female colour of throat and underparts: *alticincta* female has throat and underparts whitish, tinged cinnamon; *hondae* resembles previous but upperparts paler; *intermedia* male duller and paler above, female white below, variably streaked or spotted black on throat and anterior underparts; *fumosa* is like last, but darker and more heavily spotted; *rufiventris* female is entirely rufous below; *orenocensis* is highly distinctive, dull reddish yellow-brown above in both sexes, female entirely white below with heavy black streaks; *tobagensis* female is buff-tinged white below, anterior underparts spotted blackish. **VOICE.** Loudsong a monotonous series of dry or harsh notes repeated at same pitch and pace, rate of delivery varies among populations from short and countable (e.g. 7 notes, 2 seconds) to long and uncountable (e.g. 25 notes, 4 seconds); at least some populations also deliver musical trill preceded by longer note, stereotyped like a song. Calls also vary regionally, typically include doubled notes, some entirely harsh in quality, others incorporating a whistle, these notes also given individually.

**Habitat.** Understorey and mid-storey of a variety of wooded habitats, generally at edges; typically below 1000 m, but to 1600 m in Venezuela. In some areas occupies several habitats, but most regional populations tend to be habitat-restricted. In parts of the Guianas, nominate race is found in mangroves. More of a generalist in N Venezuela (*intermedia*), utilizing several habitats within same region, including thickets along deciduous-forest borders and seasonally flooded savannas, taller deciduous thorn-scrub, gallery-forest borders, second-growth scrub, as well as mangroves. Generally restricted to either white-sand "campina" woodland or young second-growth in S Venezuela, SE Colombia and Brazil N of R Amazon (*orenocensis* and *rufiventris*). S of R Amazon, variously occupies humid second growth and riparian vegetation in Amazon Basin, *restinga* scrub on white-sand soil in coastal NE Brazil, and tropical deciduous forest and *caatinga* scrub in interior NE Brazil.

**Food and Feeding.** Feeds on variety of insects and spiders. Recorded prey items in Surinam include hemipterans, homopterans, larval lepidopterans, coleopterans, also ootheca of cockroaches (Blattidae); in Brazil (Pará and Maranhão) include orthopterans (Acridoidea), cockroaches, hemipterans, coleopterans (Scolytidae), larval lepidopterans, termites (Isoptera), and spiders. In NE Brazil (Ceará), also observed to take mantids (Mantidae), stick-insects (Phasmatidae) and hemipterans. Closely associated partners, individuals, or family groups forage mostly 0-5 m above ground, but to 13 m in deciduous or gallery forests; median foraging height in 643 observation in Brazil (nominate race) was c. 0-6 m. Forages alone, or temporarily joins mixed-species flocks of other insectivores. In greater part of range (nominate race and *rufiventris*) forages mostly in interior of densely foliated shrubs and understorey saplings; in N Mato Grosso, Brazil, nominate race also found to forage extensively within patches of terrestrial bromeliads, where it gleans prey directly from blades of these plants and from trapped leaf litter; in NE Colombia and N Venezuela (*intermedia*) mostly in dense, viny tangles, either in crowns of shrubs and low saplings overgrown over with masses of clinging herbaceous vines, or in clusters of hanging woody vines and tendrils



that cling to larger tree trunks, also regularly in weedy thickets of dead herbaceous growth. Active forager, moving by short hops, usually on thin branches, and fluttery flights, frequently pausing for 1-2 seconds to scan for prey; posture mostly horizontal, tail held partly fanned and often swung from side to side (occasionally pounded down), wings held slightly drooped and constantly flicked (shallowly). Hitches from side to side up vertical vines, stems and branches, often leaning forward to peer under branches. Most prey perch-gleaned from live leaf, stem, vine and branch surfaces by reaching out, up or down with quick stabs of the bill, or by short horizontal lunges; occasionally makes fluttery pursuit-sallies after flushed prey (particularly moths), as well as downward and upward diagonal sallies of up to 50 cm to glean prey from foliage, branches or vines; birds inhabiting scrub, deciduous forest and tall *caatinga* woodland regularly drop to ground to take prey from leaf litter; does not hang or make other acrobatic manoeuvres. Occasionally investigates suspended dead leaves, but more often ignores them. Small prey immediately swallowed, larger items bashed repeatedly against branch before being consumed; prey capture usually followed by vigorous wiping of the bill on a branch. Five records from Amazonian Brazil of briefly following swarms of army ants (*Eciton burchellii*).

**Breeding.** Season varies considerably across broad range: Apr-Oct in Colombia, Aug and Mar in French Guiana, Apr-Aug on Chacachacare I and Tobago; in Brazil, nesting recorded in Sept-May and dependent juveniles in Aug-Sept in Amazonia, and a nest in Dec in Pernambuco. Nest a thinly woven cup composed of grass stems and fine plant fibres, suspended by rim from horizontal fork 0.3-3.5 m above ground; a nest in French Guiana was constructed by both sexes, and hung 80 cm off ground in two plants of the nettle family (*Urticaceae*) in second growth. Normal clutch 2 eggs, creamy white or greyish-white, with spots, streaks and blotches of lilac, brown, lavender-grey and deep purple concentrated at larger end and forming cap or wreath.

**Movements.** Presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout most of its rather extensive range. Some large protected areas exist within regions inhabited by this species: examples include Henri Pittier, Guatopo, Cueva de la Quebrada El Toro, Cerro El Copey/Isla Santa Margarita, Morrocoy and Yapaacana National Parks, in Venezuela, and Tapajós and Araguaia National Parks, Roraima National Forest, Cristalino State Park and Porto Seguro Reserve, in Brazil. In addition, range covers extensive areas of habitat which, although not formally protected, are at little risk of development in the near future; these include the many huge *hatos* (ranches) in the *llanos* region of Venezuela, many of which rival some national parks in size, and harbour healthy populations of this antwren. This species' ability to utilize a variety of second-growth and edge habitats renders it less vulnerable to disturbance than are most thamnophilid species.

**Bibliography.** Allen (1905), Barnés (1950), Bates *et al.* (1999), Belcher & Smoother (1936), Borges *et al.* (2001), Coelho (1979), Cory & Hellmayr (1924), Cox *et al.* (1992), French (1991), Friedmann (1947), Gonzaga (2001), Gonzaga & Pacheco (1990), Hafler (1975), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Junge & Mees (1958), Killeen & Schulerberg (1998), Krueger (1968), Meyer de Schauensee & Phelps (1978), Miller (1947), Moskovits *et al.* (1985), Novaes (1969, 1973), Novaes & Lima (1992), Olmos (1993), Oniki & Willis (1999a), Parker *et al.* (1991), Peixoto Velho (1932), Pinto (1953), Reynaud (1998), Ridgely & Tudor (1994), Ridgway (1911), Schönwetter & Meise (1967), Schubart *et al.* (1965), Sick (1955, 1993, 1997), da Silva (1988), da Silva & Oniki (1988), da Silva *et al.* (1997), Sneath (1935), Stiles *et al.* (1995), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Thomas (1982, 1990), Todd & Carriger (1922b), Tostain (1980a, 1986a), Tostain *et al.* (1992), Vere & Solórzano (1998), Wetmore (1946, 1972), Willis (1985a), Wunderle (1985), Yépez (1964), Zimmer (2003a), Zimmer, Parker *et al.* (1997).

## 117. Serra Antwren

### *Formicivora serrana*

French: Grisin des montagnes German: Serraameisenfänger Spanish: Hormiguerito Serrano

**Taxonomy.** *Neorhopias serrana* Hellmayr, 1929. Sete Lagoas, Minas Gerais, Brazil.

Morphological, vocal and molecular studies indicate that, with exception of *F. iheringi*, all species placed in current genus form a well-defined group. Present species considered to belong to a clade along with *F. littoralis* and *F. melanogaster*. Forms a superspecies with former, with which previously considered conspecific but found to differ in morphology and ecology; also, has been treated as race of latter. Two subspecies recognized.

**Subspecies and Distribution.**

*F. serrana* (Hellmayr, 1929) - SE Brazil (E Minas Gerais and adjacent C Espírito Santo).

*F. interposita* Gonzaga & Pacheco, 1990 - valley of R Paraíba do Sul in extreme SE Minas Gerais and adjacent NW Rio de Janeiro.

**Descriptive notes.** 12-13 cm; 10-13 g. Male nominate race has long white supercilium, rufous-brown crown and upperparts, outer scapulars edged white, concealed white interscapular patch; wings brownish-black, remiges blackish near base, tertials edged cinnamon-brown, wing-coverts tipped white; tail graduated, black, sides white, tips with white spots, spots becoming larger towards outer rectrices; head side, throat and underparts black, narrow white line on breast side becoming somewhat broader and greyer on flanks; underwing-coverts white. Female differs from male in having entire underparts creamy white,

sometimes tinged buff, contrasting with broad black eyband. Race *interposita* male differs from nominate in blackish upperparts, narrow and broken supercilium, white tips of lesser and median wing-coverts diminutive, no white below. Voice. Loudsong a monotonous series of dry or harsh notes at same pitch and pace (e.g. 18 notes, 4 seconds), resembling that of *F. grisea*. Calls include short (e.g. 0.1 second) downslurred whine given singly or in regular series of up to 8 notes; also thin sharp note.

**Habitat.** Understorey of semi-humid evergreen-forest edge, dry scrub and second-growth woodland, to 1550 m; race *interposita* to 700 m. Nominative form found especially in stunted *serra* woodland growing on nutrient-poor, rocky soils, such habitat having canopy height 4-10 m, few trees with trunk diameter more than 8 cm, and liberal patches of small-leaved bamboo, bracken-ferns and terrestrial bromeliads in understorey; also in shrubby thickets at edge of taller forest growing on richer soils. Race *interposita* in second-growth woodland in valley floor and surrounding foothills. Colonizes eucalyptus (*Eucalyptus*) plantations in Minas Gerais.

**Food and Feeding.** Little published. Feeds on insects, probably also spiders. Closely associated pair-members, individuals, or family groups forage mostly 0.4-4 m above ground, chiefly 1-2 m, but occasionally to 8 m; alone, or sometimes with mixed flocks of other insectivores. Active forager,

progressing by short hops and fluttery flights, separated by frequent pauses of 1-2 seconds to scan for prey; moves in zigzag progression, usually hitching from side to side; posture mostly horizontal with tail held cocked at c. 10 degrees and partly spread, both wings habitually flicked shallowly when foraging. Perch-gleans most prey from tops and bottoms of live leaves, stems and branches, by reaching up, out or down with quick bill-stabbing motions or by short horizontal lunges; also makes short hover-gleans or sallies of less than 30 cm, mostly to underside of overhanging vegetation. Frequently inspects suspended dead leaves, probing the curls lightly with the bill but not otherwise manipulating them, but just as frequently ignores dead leaves, even when close at hand. Regularly drops to the ground to forage; when doing so, spends most of time looking up and jump-gleaning prey from undersides of overhanging leaves or branches, only occasionally taking prey from surface of leaf litter. Not known to follow army ants.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Atlantic Forest Lowlands EBA. Locally fairly common in appropriate habitat. Nominative race known to occur in Serra do Cipó and Caraça National Parks, both in Minas Gerais. This species' basic ecology is little known, and its minute geographical range leaves it vulnerable. Fact that it occupies second-growth woodland and scrub makes it more secure than are true forest birds, but even secondary habitats in foothills of this region are being cleared for cattle pastures and agriculture; this perhaps especially true of parts of Rio de Janeiro occupied by *interposita*. Fortunately, has been found to colonize eucalyptus plantations where native understorey allowed to grow. Surveys needed in order to assess total population and more precisely to identify species' habitat requirements.

**Bibliography.** Christiansen & Pitter (1989), Collar *et al.* (1994), Ferreira de Vasconcelos & Melo-Júnior (2001), Gonzaga (2001), Gonzaga & Pacheco (1990), Isler & Whitney (2002), Machado & Lamas (1996), Ridgely & Tudor (1994), Sick (1993, 1997), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Tobias & Williams (1996), Wege & Long (1995), Willis & Oniki (1991), Zimmer (2003a).

## 118. Restinga Antwren

### *Formicivora littoralis*

French: Grisin du restinga German: Restingaameisenfänger Spanish: Hormiguerito Litoral

**Taxonomy.** *Formicivora serrana littoralis* Gonzaga and Pacheco, 1990, Maçambaba beach, Arraial do Cabo, Rio de Janeiro, Brazil.

Morphological, vocal and molecular studies indicate that, with exception of *F. iheringi*, all species placed in current genus form a well-defined group. Present species considered to belong to a clade along with *F. serrana* and *F. melanogaster*. Forms a superspecies with former and previously considered conspecific, but accorded species status on basis of differences in morphology and ecology; also, has been treated as race of latter. Monotypic.

**Distribution.** SE Brazil in coastal Rio de Janeiro (municipalities of Cabo Frio, São Pedro da Aldeia, Arraial do Cabo, Araruama, Saquarema) and nearby offshore islands of Comprida and Cabo Frio.



**Descriptive notes.** 13-14 cm; 14-16 g. Male is mostly blackish above and below; outer scapulars edged white, concealed white interscapular patch, greater wing-coverts tipped white, lesser and median coverts sometimes with small white tips (often absent), tail feathers with small white tips, flanks grey. Distinguished from *F. serrana* of race *interposita* by larger size, no supercilium, less white on wing-covert and tail tips. Female differs from male in brown crown and upperparts, white supercilium from above eye, broad black eyband contrasting with entirely creamy white to buff-tinged underparts. Voice. Loud-

song a monotonous series of harsh or dry notes at even pitch and pace (e.g. 12 notes, 1.8 seconds), resembling that of *F. grisea*. Short calls appear to be highly variable, a flat note dropping in pitch at end and a downslurred note recorded; also abrupt upslurred squeak and short (e.g. 0.9 seconds) musical rattle.

**Habitat.** Restricted to *restinga* scrub (nearly impenetrable shrubby thickets with abundant cacti and terrestrial bromeliads, on white-sand soil) of sandbars, sand dunes and coastal and island hill-sides near sea-level. Habitats occupied range from sand dunes with scattered shrubby thickets less than 3 m tall to extremely dense, swampy woodland with average canopy height of 6-7 m. Sometimes forages out into adjacent grassy glades with scattered shrubs.

**Food and Feeding.** Little published. Feeds on insects, probably also spiders. Closely associated partners, individuals, or family groups forage mostly 0.5-4 m above ground, usually alone, but may accompany mixed-species flocks of other insectivores in taller *restinga* woodland. Utilizes all strata of shrubbery and trees, but most foraging done in shaded inner portions of shrubby thickets. Active forager, progressing by short hops and fluttery flights, separated by frequent pauses of 1-2 seconds to scan for prey; maintains horizontal posture, habitually swinging tail from side to side. Mostly perch-gleans prey from live leaves and stems (c. 70% of all attack manoeuvres; particularly to undersides of leaves), woody branches and trunks, by reaching out, up or down with quick stabs of the bill, or by short horizontal lunges; also regularly makes short (less than 20 cm) jump-sallies to glean prey from beneath overhanging vegetation. Smaller items immediately swallowed, but larger ones bashed repeatedly against limbs before being consumed; wipes bill on branches after each prey capture. Not known to follow army ants.

**Breeding.** Three nests found in Jun, Oct and Nov on Cabo Frio I; on basis of gonadal condition of birds, breeding season thought to extend almost throughout year. Nest built by both sexes, described as a deep open cup made of vegetable fibres, attached to horizontal branch fork 1.7-2.1 m above ground. Clutch 2 eggs; both parents incubate eggs and care for young; post-fledging parental care continues until juveniles can fend for themselves.

**Movements.** Presumed resident.

**Status and Conservation.** ENDANGERED. Restricted-range species: present in Atlantic Forest Lowlands EBA. Locally abundant e.g. on Cabo Frio I, access to which is restricted by Brazilian navy. This is a habitat specialist occupying a minute range within a major vacation development area of prime beach real estate. Suitable habitat is under pressure from clearance for real-estate projects and increasing presence of squatters; type locality, near Arraial do Cabo, is severely threatened by the salt industry and development of beach-front housing. Small amounts of *restinga* are protected by three designated areas: the Jacarepiá and Maçambaba State Reserves, and the Maçambaba Environmental Protection Area. Nevertheless, total population thought to number fewer than 1000 individuals, and assumed to be declining owing to ongoing habitat destruction. Ensured continued support for protected areas where the species occurs is critical to its continued survival;



establishment of a new sizeable *restinga* reserve within areas where species occurs at highest densities is desirable. In addition, periodic monitoring of population is needed, and ecological-impact assessments must be required for any proposed major development projects within this narrow coastal strip.

**Bibliography.** Coelho *et al.* (1991), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Gonzaga (2001), Gonzaga & Pacheco (1990), Isler & Whitney (2002), Ridgely & Tudor (1994), Sick (1993, 1997), Soneghet (1991), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Tobias & Williams (1996), Wege & Long (1995), Zimmer (2003a).

## 119. Black-bellied Antwren

### *Formicivora melanogaster*

**French:** Grisin à ventre noir

**Spanish:** Hormiguero Ventrinegro

**German:** Dunkelrücken-Ameisenfänger

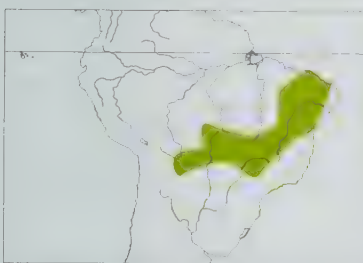
**Taxonomy.** *Formicivora melanogaster* Pelzelin, 1868, Goiás city, Goiás, Brazil.

Morphological, vocal and molecular studies indicate that, with exception of *F. iheringi*, all species placed in current genus form a well-defined group. Present species considered to form a clade with *F. serrana* and *F. littoralis*, and all three have sometimes been treated as conspecific. Two subspecies recognized.

#### Subspecies and Distribution.

*F. m. bahiae* Hellmayr, 1909 - NE Brazil (extreme E Maranhão E to W Rio Grande do Norte, S to N Bahia and W Pernambuco).

*F. m. melanogaster* Pelzelin, 1868 - C Brazil (S Mato Grosso E to S Bahia, S to W Mato Grosso do Sul, W São Paulo and N Minas Gerais), SE Bolivia (Santa Cruz, Chuquisaca, Tarija) and extreme N Paraguay (Alto Paraguay).



**Descriptive notes.** 12-13 cm. Male nominate race has broad white supercilium, dark greyish-brown crown and upperparts, crown feathers with blackish centres, outer scapulars edged white, concealed white interscapular patch; wings blackish, coverts tipped white; graduated tail black, sides white, white tips on central feathers, white tips becoming larger towards outer rectrices; white of supercilium extending in a line to breast side and broadening on flanks; head side, throat and remaining underparts black, underwing-coverts white. Distinguished from very similar *F. grisea* by broader supercilium, especially behind eye.

less white on flanks. Female differs from male in browner crown and upperparts, interscapular patch reduced or absent, broad black eyeband contrasting with white throat, faintly buff-tipped white underparts. Race *bahiae* is paler above, tail with smaller white spots, wider white line connecting supercilium and flanks on male. **VOICE.** Loudsong a monotonous series resembling that of *F. grisea*, but pace very slow (e.g. 14 notes, 6 seconds), sometimes becoming irregular. Calls include a short series of complaining squeals (e.g. 5-15 notes at 5 notes per second), variable in frequency and pace; also sharp high-pitched "seek" notes and lower-pitched, short downslurred notes; calls may vary regionally.

**Habitat.** Understorey and mid-storey of tropical deciduous forest (including *mata-de-cipó* vine forest) and taller *caatinga* scrub, from lowlands to 1050 m. Also ventures into degraded *caatinga* with taller second-growth scrub, as well as ecotones between *caatinga* and *cerrado*.

**Food and Feeding.** Little published. Feeds on variety of insects, including orthopterans and lepidopteran larvae, and spiders. Closely associated partners, individuals, or family groups forage mostly 0-3 m above ground, regularly to 6 m in dry forest in N Minas Gerais (Brazil), alone or, sometimes, with mixed-species flocks. Forages actively, mostly in dense thickets of deciduous shrubs and vine tangles, progressing by short hops and fluttery flights, separated by frequent pauses of 1-2 seconds to scan for prey; posture horizontal, partially fanned tail habitually swung from side to side, both wings shallowly flicked. Moves erratically, in zigzag progression with frequent abrupt changes of direction and retracing of routes; works small areas thoroughly before moving on; hitches from side to side up vertical stems. Perch-gleans prey from leaf, stem, vine and branch surfaces, by reaching out, up or down with quick bill-stabbing motions or by short horizontal lunges; also makes short (less than 40 cm) sallies and hover-gleans to vegetation, vines and branches; in *mata-de-cipó* woodland regularly forages within large terrestrial bromeliads, probing beneath leaf litter trapped by the blades; also regularly drops to ground to forage in leaf litter, using bill to poke underneath leaves and occasionally to flip smaller ones. Sometimes investigates suspended arboreal dead leaves, but just as often ignores them. Prey capture typically followed by vigorous wiping of the bill on a branch. Smaller prey immediately swallowed; larger items repeatedly bashed against branches before being consumed. Not known to follow army ants.

**Breeding.** In Brazil, nest with young in Pernambuco and another in earliest stages of construction in Bahia (both previously unpublished), both in Jan. Nest was an open cup 8 cm in height (from bottom to highest point of attachment), external diameter 6 cm, inside depth 3 cm, thinly woven, lined with fine grass fibres and stems, secured with spider webs around edges, suspended by rim from horizontal fork of dead branch (and further secured by fibres at one end of rim looping over a branch crossing over fork), distance from bottom of nest to ground 16 cm; fork was among cluster of thin, dead branches of a woody shrub, surrounded by scattered forbs, and with shading canopy of bare woody vines and branches 1 m above nest. Contained 2 nestlings, one obviously larger than the other, mouth-lining rich golden-yellow; fed by both parents; after one feed, female removed a faecal sac, flew low for 5-6 m, took several short hops on ground, then dropped sac and proceeded to wipe bill on a branch, before resuming foraging.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of its range. Reliance on deciduous forest and *caatinga* makes it more sensitive to disturbance than are some congeners which occupy a variety of disturbed, secondary habitats. Much of region in which it occurs lacks formal protection. The dry forests, *caatinga* scrub and *mata-de-cipó* woodlands favoured by this species are being rapidly cleared for cattle pastures and coffee plantations; even where such habitats not being cleared, they are heavily exploited by local people for firewood and fence-post production, with grazing by cattle and goats preventing regeneration of most of the woody plants. The *mata-de-cipó* woodlands of Bahia (Brazil) harbour a high proportion of endemic and threatened species, yet they remain unprotected; establishment of one or more reserves with this habitat (preferably in Jequié-Boa Nova region) should be given high priority. In addition to preserving some of Brazil's most threatened endemics, creation of such reserves would have added benefit of protecting large populations of more common dry-habitat birds such as present species.

**Bibliography.** Cory & Hellmayr (1924), Gonzaga (2001), Gonzaga & Pacheco (1990), Hayes (1995), Hellmayr (1909b), Isler & Whitney (2002), do Nascimento *et al.* (2000), Olmos (1993), Perry *et al.* (1997), Rensen *et al.* (1986), Sick (1955, 1993, 1997), Stotz *et al.* (1996), Zimmer (2003a, 2003b).

## 120. Rusty-backed Antwren

### *Formicivora rufa*

**French:** Grisin roux **German:** Zimtrücken-Ameisenfänger **Spanish:** Hormiguero Dorsirrufo

**Taxonomy.** *Myiothera rufa* Wied, 1831, interior of Bahia, Brazil.

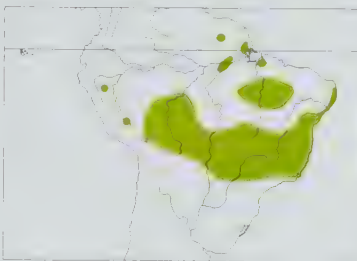
Morphological, vocal and molecular studies indicate that, with exception of *F. iheringi*, all species placed in current genus form a well-defined group. According to recent extensive morphological and vocal study, present species is closest to *F. grisea* and *Stymphalornis acutirostris*; close relationship to former also supported by genetic study. Plumage variation occurs within races as currently defined, and nominate race and *chapmani* possibly intergrade; also, possible regional variation in vocal repertoires; further study needed. Three subspecies recognized.

#### Subspecies and Distribution.

*F. r. urubambae* J. T. Zimmer, 1932 - E Peru (locally on E foothills of Andes in San Martín and Cuzco).

*F. r. chapmani* Cherrie, 1916 - S Surinam and EC Brazil (locally in Amapá, Pará, Maranhão and Piauí).

*F. r. rufa* (Wied, 1831) - SC & E Brazil (S Amazonas and extreme E Acre E to C Mato Grosso and Goiás, and from coastal Pernambuco, S to Mato Grosso do Sul and N São Paulo) S to extreme SE Peru (extreme E Madre de Dios), E Bolivia (Beni, La Paz, NE Cochabamba, Santa Cruz), and C & NE Paraguay (locally along R Paraguay and in N Amambay).



**Descriptive notes.** 12-13 cm; 11.5-14 g. Male has white supercilium, tawny-rufous crown and upperparts, outer scapulars edged white, concealed white interscapular patch; wings brownish-black, remiges (especially tertials) edged tawny-rufous, coverts mostly tipped white (buffish in some parts of range); graduated tail black fringed chestnut, with white sides and small white tips; head side, throat and central underparts black, white of supercilium extending as a line to breast side and broadening on belly side, posterior belly white, flanks and crissum cinnamon-buff; underwing-coverts white. Female is somewhat paler above than

male, hidden white interscapular patch reduced or absent, head side streaked black and white, whitish below with heavy black streaks, flanks, rear belly and crissum cinnamon. Subadult male resembles female, but throat and breast feathers appearing spotted, rather than streaked. Race *chapmani* female has much heavier streaking on underparts, especially throat, and tail tends to be more extensively black; *urubambae* female is intermediate, nearest to previous. **VOICE.** Typical loudsong a long (e.g. 34 notes, 2-3 seconds) rattle of evenly pitched harsh or sharp notes, often increasing in intensity, sometimes slightly longer initial note, note shapes appear to vary geographically; another vocalization resembling a loudsong is a series of sharp notes, slowly but irregularly delivered (e.g. 17 notes, 9-8 seconds), clearer and higher-pitched than preceding, possibly given only in some regions. Common call of an explosive or strident "chip cheep" or "tit-tweep", second note longer; notes from call, also from loudsong, sometimes delivered singly or in short countable series; rattle given in short (e.g. 0-3 seconds) bursts, repeated in quick succession.

**Habitat.** Occupies undergrowth of variety of habitats, including *cerrado* brushland, grassy *campos* with scattered trees and shrubs, white-sand forest, low seasonally wet grassland, and second-growth scrub; lowlands, to 1450 m in Andean foothills in Peru and Bolivia. Where syntopic with *F. grisea*, appears to occupy more open habitats.

**Food and Feeding.** Little published. Feeds on various insects, probably also spiders; stomach contents of single specimen from Brazil (Goiás) included hemipterans and coleopterans. Closely associated pair-members, individuals, or family groups forage mostly 0-2 m above ground, occasionally to 5 m; alone, or sometimes with mixed-species groups of other insectivores. Active forager, progressing by short hops and fluttery flights, separated by frequent pauses of 0-5-4 seconds to scan for prey. Usually hitches from side to side with each hop, working its way up through interior of shrubs, small trees and bunch-grass in zigzag progression before flying down to base of next shrub; posture generally horizontal, cocks half-fanned tail at c. 10 degrees above plane of body, and commonly swings it from side to side while simultaneously shallowly flicking partially drooped wings. Perch-gleans prey from tops and bottoms of live leaves, stems (both woody and herbaceous), seedheads and inflorescences, and large-bladed grass stems, by reaching up, out or down with quick stabbing motions of the bill, or by short, horizontal lunges; also makes frequent short (15-30 cm) sallies to glean prey from underside of overhanging vegetation; occasionally probes grass sheaths with its bill. Small prey immediately swallowed; larger items bashed repeatedly against branches before being consumed; wipes bill on branch after consuming prey. Not known to follow army ants.

**Breeding.** Sept-Jan in Brazil. One described nest, from São Paulo (Brazil), a deep, thinly woven cup with external diameter 7 × 6 cm, internal diameter 6 × 4 cm, depth 4-8 cm, outside height 7 cm, composed of light-coloured grass stems (through which contents visible), attached by rim 19 cm above ground in fork of small twig in small bush, and concealed by overarching frondlet of small ground palm amid dense but low mixture of grasses and small bushes. Clutch was 2 eggs, white, speckled brown around middle; incubation shared by both parents during day, probably only by female at night (this not established), incubation period not known; both also brooded and fed nestlings, which fledged on eighth day after hatching; adults believed to have re-nested soon after, fledging three young; young evidently stay with parents almost until next breeding season.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of its extensive but patchy range. Regions inhabited include a number of protected parks and reserves, e.g. Chapada dos Guimarães, Chapada Diamantina, Sete Cidades, Pantanal Mato-grossense and Araguaia National Parks, in Brazil. As this species occupies a number of different habitats, including second-growth scrub, it is considered less vulnerable to disturbance than are most thamnophilids.

**Bibliography.** Bates *et al.* (1999), Cherrie (1916a), Cintra & Yamashita (1990), Cory & Hellmayr (1924), Davis (1993), Ericson & Amarilla (1997), Foster *et al.* (1994), Gonzaga (2001), Hackett & Rosenberg (1990), Haverschmidt & Mees (1994), Isler & Whitney (2002), Killen & Schulerberg (1998), Motta-Júnior (1990), Motta-Júnior & Vasconcello (1996), Naka *et al.* (2000), Naumburg (1930, 1939), Novas (1992), Parker (1989), Parker & Bailey (1991), Pearce-Higgins (2000), Peixoto Velho (1932), Ridgely & Tudor (1994), Sanaiotti (1986), Sick (1993, 1997), da Silva & Oniki (1988), da Silva *et al.* (1997), Sneath (1913), Stotz *et al.* (1996), Straube & Bormschein (1995), Tubelis & Tomás (1999), Willis & Oniki (1988b), Zimmer, J.T. (1932c), Zimmer, K.J. (2003a).



## 121. Black-hooded Antwren

*Formicivora erythronotos*

French: Grisin à dos roux

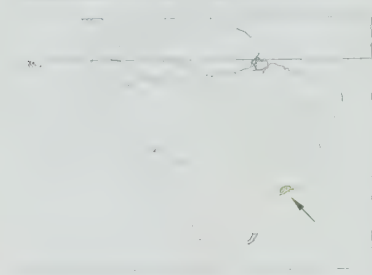
Spanish: Horniguerito Encapuchado

German: Schwarzkopf-Ameisenfänger

Other common names: Hooded Antwren

**Taxonomy.** *Formicivora erythronotos* Hartlaub, 1852, Brazil.

Morphological, vocal and molecular studies indicate that, with exception of *F. theringi*, all species placed in current genus form a well-defined group. Following its original description, present species was transferred to genus *Myrmotherula*; after long period with no records, species was rediscovered, and information on vocalizations and ecology strongly indicated that it should be returned to its present genus, a conclusion supported by recent extensive morphological and vocal study. Monotypic.

**Distribution.** SE Brazil in extreme E São Paulo and S Rio de Janeiro.

**Descriptive notes.** 11 cm. Male has deep rufous upperparts; otherwise, plumage mostly black, except wing-coverts thinly tipped white, white flanks. Female has black replaced by olive-brown, paler and buffier on underparts; variable amount of scattered, fine dark streaking or mottling on head and throat. Voice. Loudsong a dry rattle resembling that of *F. grisea*, but pace faster (e.g. 17 notes, 2-6 seconds). Common calls include soft "chep-ep", and explosive, nasal descending note that is often doubled.

**Habitat.** Variety of scrubby and regenerating habitats and second-growth woodland in

coastal plain; typically in young second growth, but also in secondary forest. Rediscovery site was in a swampy patch of secondary forest bordering mangroves; later found in nearby dry secondary forest. More recently, has been found in overgrown, abandoned banana plantations regenerating to secondary woodland, these areas having variably open understorey with numerous banana plants and viny thickets, and relatively uniform canopy of 3-5 m, with scattered emergent trees to 20 m; light-gaps in understorey dominated by smaller shrubs. Also occurs in lush understorey of modified *restinga*. Early successional habitats are dominated by pioneer species, including *Lantana camara*, *Cecropia*, *Morus*, *Rubus*, *Vernonia*, and grasses. Has successfully colonized fields 2 months after burning, where little regenerating vegetation.

**Food and Feeding.** Little published. Feeds on insects and spiders; also apparently small frogs. Closely associated pair-members, individuals, or family groups forage mostly 0-3 m above ground, occasionally to 7 m; seldom, if ever, with mixed-species flocks. Active forager, progressing through tangles of vegetation by short hops, with pauses of 1 second or less between movements; follows zigzag course, often hitching from side to side while moving upwards or horizontally; habitually

flicks wings while foraging, flashing the white flanks; no habitual tail movements, although tail occasionally wagged sideways. Vast majority of attack manoeuvres are perch-gleans from all surfaces of green leaves (both large and small), woody branches, stems and vines, including frequently from dead herbaceous vines; dead leaves frequently scanned, but seldom manipulated. One individual spent much time less than 1 m above ground, gleaning prey from tops of bracken-ferns. Short (less than 0.3 m), diagonal, upward-directed sallies to undersides of green leaves also frequently employed. Sometimes hitches up clusters of hanging vines along larger tree trunks, gleaning mostly from vine surfaces, to heights of 7 m. Not known to follow army ants.

**Breeding.** Nests found mid-Aug to early Feb. Nest built by both sexes, a small cup with fragile walls, constructed mainly from rootlets and a plant fibre, decorated with bryophytes (of at least 7 species), attached by rim to twigs of herbaceous plants 29-94 cm off ground. Clutch 2 eggs, more rarely 1. pinkish-white, spotted blackish-brown mostly around blunt end; incubation period 13-15 days; both sexes brood and feed young, only female broods at night; at two nests, male apparently contributed slightly more of the food for chicks and brooded young 57% of daylight time; nestlings fed primarily small caterpillars, also variety of other arthropods, and once a small frog offered; nestling period 10-11 days. Probability at start of incubation that eggs will produce fledglings was 0.23.

**Movements.** Presumed resident.

**Status and Conservation.** **ENDANGERED.** Restricted-range species: present in Atlantic Forest Lowlands EBA. Known from c. 20 specimens from 19th-century, and unrecorded for more than 100 years, this species was feared extinct. Had been thought confined to mountain forests near Nova Friburgo, until rediscovered in Sept 1987 at sea-level near beach resort of Angra dos Reis, on S coast of Rio de Janeiro state; subsequently found at several sites on W side of Baía de Ribeira, all near sea-level; now believed that specimen records from Nova Friburgo were in error, and that the species has always been confined to coastal lowlands. Main localities are Ariró (density of 89 pairs/km<sup>2</sup>) and Vale do Mambucaba (156 pairs/km<sup>2</sup>), with smaller numbers recorded at Bracuí, Frade, São Gonçalo, Taquari and Barra Grande. As part of an intensive effort to understand the biology of this threatened species, 24 nests were located in S Rio de Janeiro. Appears capable of surviving in a variety of humid second-growth habitats, but total range estimated at only 130 km<sup>2</sup>, and global population thought to number 1000-2500 individuals. Development of the narrow coastal plain for tourism and beachside housing has been extensive, and threatens many patches of suitable habitat; also widespread clearance of habitat for pasture and for plantations of *Euterpe* palms, both of which provide unsuitable habitat. Such plantations have already reduced available habitat in Vale do Mambucaba. The species does occur in the buffer zone of Serra da Bocaina National Park, but has not yet been found in nearby reserves such as Cairuçu Environmental Protection Area, Tamoios Ecological Station and Tamoios Environmental Protection Area. Systematic surveys needed in order to locate any additional populations of this bird, so that establishment of appropriate protected areas can be instituted.

**Bibliography.** Anon. (1988a), Buzzetti (1998), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Gonzaga (2001), Hackett & Rosenberg (1990), Isler & Whitney (2002), King, W.B. (1978/79), Mendonça & Couri (1999), Mendonça & Gonzaga (1998, 1999a, 1999b, 1999c, 2000), Pacheco (1988), Ridgely & Tudor (1994), Scott & Brooke (1985), Shuker (1993), Sick (1969a, 1993, 1997), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Tobias & Williams (1996), Wege & Long (1995), Whitney (2003a), Zimmer (2003a).











# Genus *STYMPHALORNIS*

Bornschein *et al.*, 1995

## 122. Marsh Antwren

### *Stymphalornis acutirostris*

**French:** Grisin des marais

**German:** Schilfrohr-Ameisenfänger

**Spanish:** Hormiguerito del Paraná

**Other common names:** Marsh Antbird, Parana Antwren

**Taxonomy.** *Stymphalornis acutirostris* Bornschein *et al.*, 1995. Balneário Ipararay, Paraná, Brazil. Recent extensive morphological and vocal study (completed subsequent to the organization of this chapter) suggested that species should be placed in genus *Formicivora*, being most closely related to *F. rufa* and *F. grisea*. Monotypic.

**Distribution.** SE Brazil in coastal Paraná and extreme NE Santa Catarina.



**Descriptive notes.** 14 cm; 10 g. Male has grey forehead, short, poorly defined whitish supercilium, whitish crescent below eye; crown and upperparts chestnut-olive; wings blackish, flight-feathers edged chestnut-olive, coverts blacker and boldly tipped white, sometimes tinged ochraceous; graduated tail black; side of head, throat, breast and belly lead-grey, often faint white grizzling on side of face and neck, flanks and crissum dark olive-brown. Female is like male, except throat and anterior underparts white, densely and broadly streaked black, lower underparts lighter. **Voice.** Loudsong consists of doublets of

abrupt notes, first note typically more intense and lower-pitched, repeated in slightly unevenly and variably paced series (e.g. 7-10 doublets, 5-6 seconds), second note sometimes repeated by itself. Calls are variable squealing notes ranging in length from slightly longer than those in song to c. 0.35 seconds.

**Habitat.** Littoral marshes dominated by *Typha domingensis* and *Scirpus californicus* and with other marsh vegetation (especially Asteraceae and Poaceae) such as grasses and woody shrubs; near sea-level. Also occupies riverine marshes, wet fields and mangrove swamps, all usually subject to periodic fluctuations in water levels.

**Food and Feeding.** Little known. Feeds on variety of arthropods. Closely associated pair-members, individuals, or family groups forage mostly 0.2 m above ground. Active, progressing by short hops and fluttery flights, separated by pauses of 1-2 seconds to scan for prey; posture mostly horizontal, but more diagonal when hitching upwards through reeds or vertical stems and branches; tail held partially cocked (c. 10 degrees above plane of body), both wings shallowly flicked. Generally keeps to cover of dense marsh vegetation, hence difficult to observe. Most prey perch-gleaned from grass, reed, stem and live-leaf surfaces, by reaching up, out or down with quick bill-stabbing motions, or by short, horizontal lunges; sometimes jump-gleans or makes short (less than 30 cm) sallies to underside of overhanging vegetation. Not known to follow army ants.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** ENDANGERED. Locally fairly common. Only recently discovered and, although not uncommon in appropriate habitat, has a tiny range, estimated at 1850 km<sup>2</sup>, and threatened by inherent vulnerability of its marshland habitat. First found in 1995, in lower third of R Guaraguaçu and R Nhundiaquara, in Parnaguá Bay; subsequently found in several areas of Matinhos and Guaratuba municipalities in Paraná, and also in São Francisco Bay in Garuva, Santa Catarina. Stronghold probably Guaratuba Bay, where it is known from Ilha do Chapeu, Chapeuzinho, and lower thirds of the São João, Cubatão, São Joãozinho, Descoberto, Boguaguçu, Preto, Paraná and Alegre rivers. All populations restricted to small patches or narrow tracts of habitat, some of which, including the type locality, are under extreme human pressure, and have been reduced by fires, landfills, agricultural development, cattle grazing, and invasive vegetation (especially *Bracharia*). Many small marshes in extreme SE Paraná (near Garuva) each held 1-3 pairs as recently as Nov 2001. Surrounding region, however, supports intensive, large-scale agricultural production, particularly of rice and bananas; in many cases, the various marshes inhabited by this species are encircled by cultivated lands, and could quite conceivably soon be converted to rice production. Immediate action to protect key sites, especially in Guaratuba Bay, is required. Additional intensive surveys needed in order to determine the distributional limits of this species.

**Bibliography.** Bornschein & Reinert (1996, 1997b), Bornschein *et al.* (1995), Gonzaga (2001), Isler & Whitney (2002), Naka *et al.* (2000), Reinert & Bornschein (1996, 1998), Stattersfield & Capper (2000), Zimmer (2003a).

# Genus *DRYMOPHILA* Swainson, 1824

## 123. Ferruginous Antbird

### *Drymophila ferruginea*

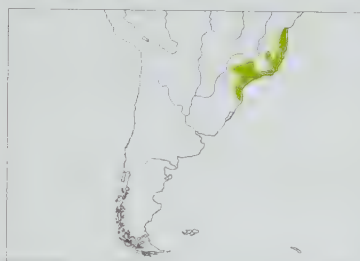
**French:** Grisin rouilleux

**German:** Rostbauch-Ameisenfänger

**Spanish:** Tiluchi Herrumbroso

**Taxonomy.** *Myiothera ferruginea* Temminck, 1822, vicinity of Rio de Janeiro, Brazil.

Members of genus form a well-defined clade, and appear to be closely related to *Hypocnemis*. Present species closely related to *D. rubricollis*, until recently treated as conspecific. Monotypic. **Distribution.** SE Brazil, from SE Bahia S to NE Santa Catarina, extending inland to EC Minas Gerais and W São Paulo.



**Descriptive notes.** 12-13 cm; 9.5-11.5 g. Male has black crown, long white supercilium, broad black band through eye; lower side of head white, speckled black; upperparts reddish yellow-brown, centre of back black with some white of interscapular patch showing, rump rufous; wings brownish-black, remiges edged buffish, coverts broadly tipped white; graduated tail black, broadly tipped white; chin white, speckled black, throat and remaining underparts rufous. Distinguished from very similar *D. rubricollis* by black on back, somewhat darker remiges, darker rufous underparts, blacker tail shorter on average. Female is generally paler than male, especially below, crown streaked olive, wing-covert tips tinged rufous, no white interscapular patch. Subadult male resembles female, but forehead and crown feathers broadly margined pale buff, supercilium tinged buff, underparts paler, white interscapular patch. **Voice.** Male loudsong 2 rich notes with little space between, first note shorter, downslurred, more intense, second longer and more complex, ending upslurred; female loudsong similar notes, usually at slightly higher pitch, but repeated 2-4 times in rapid succession, typically starting as male ends his phrases. Calls include rich "chewp" and short, "chirring" rattle.

**Habitat.** Understorey and mid-storey of bamboo thickets in evergreen forest, from sea-level to 1250 m, occasionally to 1600 m. Found in primary forest, where bamboo often occurs along forest edge, or occupies treefall and landslide light-gaps; also in second-growth woodland, as well as in regenerating pure stands of bamboo. Often found with *D. ochropyga*; in some regions inhabits same bamboo thickets as *D. rubricollis* at 800-1200 m, but in others the two appear to be elevationally parapatric, and for most part they do not occur in same places; also occasionally with *D. genei*, but occurs mostly below elevations occupied by that species.

**Food and Feeding.** Little published. Feeds on various insects, including lepidopteran larvae and orthopterans; probably also on spiders. Closely associated pair-members, individuals, or family groups forage mostly 1-10 m above ground, alone or with mixed-species flocks of other insectivores; mean foraging height in almost 250 observations was 4.1 m. Active forager; progresses by short hops, separated by pauses of 1-3 seconds to scan; often clings laterally to vertical stems, and hitches from side to side as it moves. Forages mostly at interface of dense bamboo thickets and forest, particularly where climbing bamboo tangles and vines overtop understorey saplings, creating dense mats of foliage; concentrates activities in leafy arching crowns of bamboo, rather than along more open stems below; also commonly forages in low, dense thickets of young bamboo, densely leaved shrubs, and ferns. At higher elevations, obtains insects primarily from bamboo leaves (including dead ones) and stems; at lower elevations, forages at least as frequently in dead leaves and live leaves of species other than bamboo. Perch-gleans from live leaves (particularly their undersides) or stems, by reaching up, out or down with quick stabs of the bill or by short, horizontal lunges; also makes short (less than 30 cm) fluttering sallies to glean prey from underside of overhanging vegetation. Commonly inspects small dead leaves trapped in branchlets and clusters of bamboo stems, and probes at nodes where bamboo spines trap leaf litter; frequently pulls and tears at suspended dead leaves with its bill, but rarely spends more than 2-3 seconds at any one leaf; also observed to work methodically through patches of dead ferns and glean items from stems and curled leaflets of the fronds. Not known to follow army ants.

**Breeding.** Little known. Season Oct-Feb, based on observations of food-carrying adults, young following adults, and single described nest under construction. Nest was pendent, composed of mossy strands, placed 1 m up in fork in compound fern leaf. Clutch size not known; eggs white, with irregularly distributed reddish-brown speckles, blotches and lines, either throughout or concentrated at larger end.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Common throughout much of its range. Range includes several large protected areas, e.g. Serra da Bocaina, Serra dos Órgãos and Itatiaia National Parks, Augusto Ruschi Biological Reserve, Caraça National Park and Serra do Mar State Park. Enforced protection of all existing parks and reserves should ensure continued viability of this species. Its ability to utilize second-growth habitats may render it less vulnerable to disturbance than are most other antbirds.

**Bibliography.** Cândido (2000), Cory & Hellmayr (1924), Davis (1945, 1946), Ferreira de Vasconcelos & Melo-Júnior (2001), Goerck (1999a, 1999b), Ihering (1900), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Leme (2001a), Machado (1999), Parker (2003a), Parker & Goerck (1997), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993, 1997), Stotz *et al.* (1996), Teixeira *et al.* (1989), Wilkinson & Smith (1997), Willis (1988a), Zimmer (2003a).

## 124. Bertoni's Antbird

### *Drymophila rubricollis*

**French:** Grisin de Bertoni

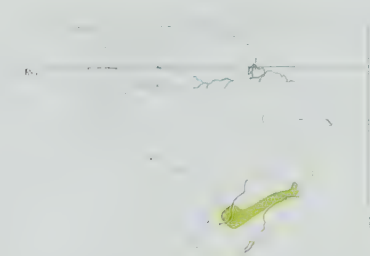
**German:** Zimtbauch-Ameisenfänger

**Spanish:** Tiluchi Colorado

**Taxonomy.** *Formicivora rubricollis* W. Bertoni, 1901, Puerto Bertoni, Alto Paraná, Paraguay. Members of genus form a well-defined clade, and appear to be closely related to *Hypocnemis*. Present species closely related to *D. ferruginea*, and until recently treated as conspecific. Monotypic. **Distribution.** SE Brazil (extreme SE Minas Gerais, Rio de Janeiro and C & E São Paulo S to W & C Paraná and NW Rio Grande do Sul), E Paraguay (Canendiyu, Alto Paraná, Caazapá) and extreme NE Argentina (N Misiones).

**Descriptive notes.** 12.5-13.5 cm; 1 individual 10 g. Male has black crown, long white supercilium, broad black band through eye; lower side of head white, speckled black; upperparts reddish yellow-brown, few black feathers on back, white interscapular patch, rump rufous; remiges brownish-black, edged paler, wing-coverts black, broadly tipped white; graduated tail dark brown to blackish-brown, broad white tips; chin white, speckled black, throat and remaining underparts rufous. Distinguished from very similar *D. ferruginea* by having only few black feathers on back, somewhat paler remiges, paler underparts, browner tail longer on average. Female is paler than





male, forehead and crown rufescent brown, this reduced to streaks on hindcrown, wing-covert tips tinged rufous, no white interscapular patch. Subadult male is like female, but with white interscapular patch. **VOICE.** Male loudsong a short series (e.g. 9 notes, 1-7 seconds) but length variable, introductory note followed by shorter, sharper note that gradually lengthens into longer harsher notes while descending slightly in pitch, intensifies initially and also softens at end; female song lower-pitched, similar in pattern to male, but intermediate notes shorter and faster in greater contrast to final long, raspy notes, also usually less intense

than male song, and first note often overlaps last note of male's. Calls include long (e.g. 0.2 seconds), somewhat harsh and complaining notes in short series of 4-6, also similar but harsher and longer (e.g. 0.3-0.4 seconds) notes in triplets.

**Habitat.** Understorey and mid-storey of bamboo thickets in montane and lowland evergreen forest; at low elevations down to near sea-level in S, restricted to higher levels, from c. 900 m to 2000 m, in N. Perhaps less confined to bamboo in S end of range. In N of range, sometimes found in same bamboo stands as *D. ochropyga*, *D. genei* and *D. ferruginea*, depending on elevation; co-occurs with last in some regions, but in others the two appear to be elevationally parapatric, and in general they do not occur in same places.

**Food and Feeding.** Little published. Feeds on insects, including lepidopteran larvae and orthopterans; probably also on spiders. Closely associated partners, individuals, or family groups forage mostly 1-15 m above ground, alone or with mixed-species flocks of other insectivores; mean foraging height in over 200 observations was 3-9 m. Active forager; progresses by short hops, separated by pauses of 1-3 seconds to scan for prey. Appears to forage almost exclusively in bamboo, and only occasionally ventures into adjacent broadleaf trees or shrubs in N portion of range; hitches from side to side along arching bamboo stems; posture mostly horizontal, with tail held at same plane or slightly cocked, often swung from side to side and occasionally flicked up to 10-20 degrees above horizontal, then slowly lowered; habitually flicks both wings. Most attack manoeuvres are perch-gleans to live bamboo leaves, or suspended dead leaves trapped in the bamboo; gleans mostly by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; also makes short (less than 30 cm) fluttering sallies to underside of overhanging vegetation. Not known to follow army ants.

**Breeding.** In Brazil, nest found in Nov in Rio de Janeiro (Itatiaia) and female carrying food to concealed fledgling in Jan in São Paulo. Single known nest (details previously unpublished) was a small pendent cup/bag situated in fork of two intersecting thin stems of bamboo (*Merostachys*), concealed on all sides and above by bamboo leaves, near top of dense stand on steep hillside under broken-canopy forest (steep slopes prevented close examination); singing adults carrying food to nest.

**Movements.** Presumed resident; possibly some periodic local movements in response to major die-offs of bamboo.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Atlantic Forest Lowlands EBA. Fairly common throughout much of its range. Region within which it occurs contains several protected areas, e.g. Aparados da Serra, Iguaçu, Itatiaia and Serra dos Órgãos National Parks, in Brazil, and Iguazú National Park and Uruguá-i Provincial Park, in Argentina. May undergo periodic population fluctuations at local level coincident with major die-offs of bamboo. Enforced protection of all existing parks and reserves in which this species occurs should ensure its continued viability.

**Bibliography.** Belton (1985), Ferreira de Vasconcelos & Melo-Júnior (2001), Goerck (1999b), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Leme (2001a), Lowen *et al.* (1997), Pacheco & Laps (2001), Parker & Goerck (1997), Ridgely & Tudor (1994), Sick (1993, 1997), Stotz *et al.* (1996), Whitney (2003b), Willis (1988a), Zimmer (2003a)

## 125. Rufous-tailed Antbird

### *Drymophila genei*

**French:** Grisin à queue rousse **German:** Rostschwanz-Ameisenfänger **Spanish:** Tiluchí Colirrufo

**Taxonomy.** *Formicivora Genei* de Filippi, 1847, Brazil.

Members of genus form a well-defined clade, and appear to be closely related to *Hypocnemis*. Present species most closely related to *D. ochropyga*. Monotypic.

**Distribution.** SE Brazil in SE Minas Gerais, S Espírito Santo, NE São Paulo and Rio de Janeiro.

**Descriptive notes.** 13-14 cm. Male has black crown, long white supercilium, black band through eye; lower side of head white, speckled black; back olive-brown, spotted black, white interscapular patch often apparent, rump and tail rufous; flight-feathers rufous, wing-coverts black, tipped white; throat and anterior underparts white, spotted black, spots heaviest on breast, unspotted rufous-brown flanks and crissum. Female has crown and nape rufous-brown, streaked blackish, weak supercilium whitish, line through eye dark brown, upperparts, wings and tail like male except no black spots on back, no white interscapular

patch; head side, throat and underparts buff, faint dark marks anteriorly. **VOICE.** Male loudsong a sharp note followed rapidly by long raspy notes on same pitch (e.g. 5 notes, 1-8 seconds); female lower-pitched, 3 distinct whistles followed by 2 weak rapidly delivered notes (e.g. 5 notes, 1-3 seconds). Calls include flat, thin, somewhat high-pitched, short (e.g. 0.15-0.2 seconds) notes in groups of 3-6 and similar groups of longer (e.g. 0.3-0.5 seconds) raspy "chirrs", closely spaced.

**Habitat.** Understorey of bamboo thickets in montane evergreen forest, occasionally in adjoining vine tangles and dense foliage; mostly 1150-2200 m, occasionally to 800 m. Often in same bamboo thickets as *D. rubricollis*, and replaced in similar habitat at lower elevations by *D. ochropyga* and *D. ferruginea*; all four species sometimes occur together in bamboo thickets between 1150 m and 1300 m.

**Food and Feeding.** Little published. Feeds on insects, probably also spiders. Closely associated partners, individuals, or family groups forage mostly 0-3 m above ground, rarely to 7 m; mean foraging height in 278 observations was 1-5 m. Alone, but sometimes briefly joins mixed-species flocks of other insectivores as these pass through its territory. Active forager; progresses on zigzag

course by short hops, separated by frequent pauses of 1-2 seconds to scan; somewhat erratic, hitches from side to side, abruptly changes direction, frequently retraces routes. Forages both in bamboo and in nearby vine tangles overtopping shrubbery and small saplings, as well as in interior of shrubby thickets. Most attack manoeuvres are perch-gleans, primarily to vine and bamboo stem and leaf surfaces, but almost equally as often to suspended dead leaves and live leaves of broadleaf plants; gleans from vines, stems and live leaves (mostly undersides) by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; sometimes hangs head first to glean items from tops of lower leaves. Delicately probes curled tips of suspended dead leaves with its bill; also probes dead leaves trapped in nodes and bases of spine clusters of bamboo. Rarely follows army ants; one pair briefly visited swarm of *Labidus praedator* at 1700 m in Itatiaia National Park (Rio de Janeiro).

**Breeding.** Nothing known.

**Movements.** Presumed resident; possibly some periodic local movements in response to major die-offs of bamboo.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Atlantic Forest Mountains EBA. Locally common in several protected areas, e.g. highlands of Itatiaia, Serra dos Órgãos and Serra da Bocaina National Parks. Has a tiny range and specialized habitat requirements; populations should therefore be monitored. Enforced protection of all existing parks and reserves in which this species occurs should ensure its continued survival. Episodic large-scale die-offs of bamboo may result in periodic fluctuations in local populations of this and other bamboo specialists.

**Bibliography.** Collar *et al.* (1994), Cory & Hellmayr (1924), Goerck (1999a, 1999b), Holt (1928), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Luderwaldt (1909), Parker (2003a), Parker & Goerck (1997), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993, 1997), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Willis (1985a), Zimmer (2003a).

## 126. Ochre-rumped Antbird

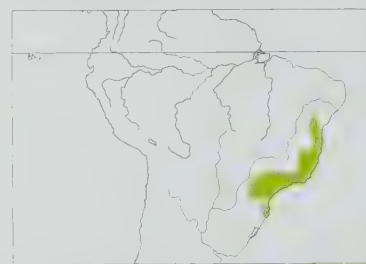
### *Drymophila ochropyga*

**French:** Grisin à croupion ocre **German:** Ockerbüzel-Ameisenfänger **Spanish:** Tiluchí Culipardo

**Taxonomy.** *Formicivora ochropyga* Hellmayr, 1906, Ipanema, São Paulo, Brazil.

Members of genus form a well-defined clade, and appear to be closely related to *Hypocnemis*. Present species most closely related to *D. genei*. Monotypic.

**Distribution.** SE Brazil from C & SE Bahia, E Minas Gerais and Espírito Santo S to E São Paulo, E Paraná and E Santa Catarina.



**Descriptive notes.** 12.5-13.5 cm. Male has black crown, long white supercilium, black band through eye; lower side of head white, speckled black; back grey, few central feathers black and white, white interscapular patch often apparent, rump light rufous; wings blackish, remiges thinly edged buffish, coverts broadly tipped white; graduated tail black, tipped white; throat and anterior underparts white, streaked black, streaks heaviest on breast, unmarked rufous flanks and crissum. Female differs from male in buff-streaked crown, olive-grey back, duller underparts less heavily streaked and more extensively buff.

**VOICE.** Male loudsong a short, rich flat note immediately followed by a long, higher-pitched raspy note; female lower pitched, 4 evenly spaced notes dropping slightly in pitch, followed by 2 raspy notes of which second resembles long second note of male song (e.g. 6 notes, 2-2 seconds). Common call a series of 3-5 evenly paced, piercing, sharp notes.

**Habitat.** Understorey of dense bamboo thickets and vine tangles in montane evergreen forest, locally also in lowland evergreen forest; 300-1950 m. Overlaps with *D. ferruginea* and, at upper end of elevational range, with *D. genei* and *D. rubricollis*.

**Food and Feeding.** Little published information available. Feeds on variety of insects and spiders; seen taking white egg sac, probably of spider. In one study, commonest arthropods collected from dead leaves, the species' primary feeding site, were spiders, beetles (Coleoptera), cockroaches (Blattellidae), Orthoptera, and woodlice (Isopoda). Closely associated pair-members, individuals, or family groups forage 0-3 m above ground, rarely higher; mean foraging height in over 200 observations was 1-7 m, and in another case median height of 23 observations was 0-3 m. Alone, or sometimes in mixed-species flocks of other insectivores as these pass through its territory. Active forager, progressing by short hops, with frequent pauses of 1-3 seconds to scan for prey; posture mostly horizontal; partially fanned tail often flicked rapidly up to 10 degrees above plane of body, then slowly flexed downwards, and both wings habitually flicked. Somewhat erratic in its movements, follows zigzag course and hitches from side to side with each hop, with abrupt changes of direction and frequent retracing of routes; sometimes jumps briefly to the ground as it makes its way. Forages in dense stands of bamboo, both in shaded, more mature stands and in younger successional stages in light-gaps, also in nearby shrubby vine tangles. Most attack manoeuvres are perch-gleans, great majority of these targeted at dead leaves, e.g. 55% of 213 observations in one study; of 139 observations of perch-gleaning in another study, 70% were at dead leaves, most of remainder at twigs and bamboo nodes (19%), and very few at live foliage (7%). In one study, over half of dead leaves attacked were bamboo, about one quarter were curled leaves, and remainder were ferns. Gleans most prey items by reaching up, out or down with quick stabs of the bill, or by short, horizontal lunges; seldom hangs or sallies. Not known to follow army ants.

**Breeding.** Almost nothing known. Eggs white, irregularly speckled, blotched and lined with red-brown, markings all over or concentrated at larger end.

**Movements.** Presumed resident; possibly some periodic local movements in response to major die-offs of bamboo.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Atlantic Forest Mountains EBA. Locally fairly common. Occurs in several protected areas, e.g. Serra dos Órgãos, Itatiaia and Caraça National Parks, and Serra do Mar State Park. Has tiny range and specialized habitat requirements, and populations therefore should be monitored. Episodic large-scale die-offs of bamboo may result in periodic fluctuations in local populations of this and other bamboo specialists. Enforced protection of all existing parks and reserves in which this species occurs should ensure its continued viability.

**Bibliography.** Cândido (2000), Collar *et al.* (1994), Cory & Hellmayr (1924), Davis (1945, 1946), Ferreira de Vasconcelos & Melo-Júnior (2001), Ferreira de Vasconcelos *et al.* (1999), Goerck (1999a, 1999b), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Leme (2001a, 2001b), Machado, C.G. (1999), Machado, R.B. & Lamas



(1996), Naka *et al.* (2000), Parker (2003a), Parker & Goerek (1997), Ridgely & Tudor (1994), do Rosário (1996), Schönwetter & Meise (1967), Scott & Brooke (1985), Sick (1993, 1997), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Zimmer (2003a).

## 127. Dusky-tailed Antbird

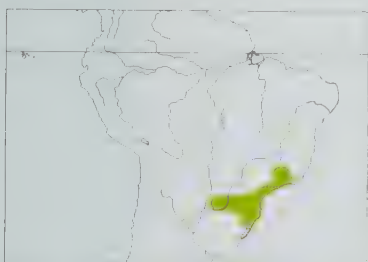
### *Drymophila malura*

**French:** Grisin malure **German:** Olivrücken-Ameisenfänger **Spanish:** Tiluchi Estriado Oriental

**Taxonomy.** *Myiothera malura* Temminck, 1825, Ipanema, São Paulo, Brazil.

Members of genus form a well-defined clade, and appear to be closely related to *Hypocnemis*. Monotypic.

**Distribution.** SE Brazil (S Minas Gerais, S Espírito Santo and Rio de Janeiro S to E & S Paraná, Santa Catarina and N Rio Grande do Sul), SE Paraguay (Alto Paraná, Caazapá, E Paraguari, Itapúa) and NE Argentina (Misiones).



**Descriptive notes.** 13.5-14.5 cm; 11-13 g. Male has head and neck streaked black and whitish-grey, upperparts olive-grey, interscapular patch white with black feather tips; remiges brownish, wing-coverts blackish with white tips; graduated tail brownish-grey; throat and anterior underparts streaked black and white, flanks and crissum olive-brown. Female has crown, nape and side of neck heavily streaked dark brown and buff to olive-brown, head side finely streaked dark (foreface mostly unstreaked), pale buff crescents above and below eye; upperparts, including tail, warm brown, interscapular patch blackish-grey,

flight-feathers warm brown, edged rufous, wing-coverts contrastingly blackish, narrowly tipped white or pale buff; buff below, paling to almost whitish on chin and centre of belly, breast variably streaked with dark brown, heaviest on sides, faint in middle, vent and lower flanks rich ochraceous; axillaries white. **Voice.** Male loudsong a simple short (e.g. 2-3 seconds) series of abrupt emphatic notes that speed up into trill, dropping slightly in pitch and intensity at end; female loudsong shorter (e.g. 1-4 seconds), weaker, lower-pitched, 4-5 whistles slow down, drop in pitch, and lengthen into slur before abruptly ending in short higher-pitched trill. Calls include short (e.g. 0-2 seconds) thin, buzzy (modulated), somewhat high-pitched notes, repeated after short intervals, and harsher note with clearer ending.

**Habitat.** Understorey of lowland and foothill evergreen forest, forest edge, and second-growth woodland; to 1300 m, locally to 1900 m. Seems to require dense tangles or thickets of bracken-ferns, vines or bamboo, and at forest edges often with tall grass mixed in. Not so restricted to bamboo as some other members of genus, although can be found in clear-cuts that are regenerating with dense, young stands of bamboo and grass less than 2 m tall.

**Food and Feeding.** Little published. Feeds on insects, probably also spiders. Closely associated partners, individuals, or family groups forage mostly 0-4 m above ground, occasionally to 8 m; mean foraging height in 195 observations was 1.9 m. Alone, or sometimes briefly joining mixed-species flocks as these pass through its territory. Active forager, progressing by short hops, separated by frequent pauses of 1-3 seconds to scan; posture generally horizontal; tail held slightly fanned, usually at level of body or cocked slightly above horizontal, and regularly dipped slowly 30 degrees before being flicked quickly upwards; both wings habitually flicked. Somewhat erratic in movements, follows zigzag course with abrupt changes of direction and frequent retracing of routes. Forages mostly in dense cover, including low viny thickets and leafy crowns of bamboo. Most prey perch-gleaned from tops and bottoms of live broad leaves, dead leaves, bamboo stems and internodes, and vines, by reaching up, out or down with quick stabs of the bill; sometimes jump-gleans or makes short (less than 30 cm) fluttering sallies to underside of overhanging vegetation; also lightly probes curled tips of suspended dead leaves with the bill. Not known to follow army ants.

**Breeding.** Little known. A nearly completed nest almost certainly of this species (the pair not actually seen on the nest) found in Sept in Brazil (Minas Gerais): an open cup measuring 8 × 6.5 cm, height 10.5 cm, made of dead bamboo leaves interwoven with green moss, seed stems and spider webs, supported between horizontal branches of bamboo 98 cm up in bamboo scrub 2-3 m tall. Eggs from other locations creamy yellow, covered with violet-brown and dull lilac-grey spots, most concentrated at blunt end.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Locally fairly common; somewhat more patchily distributed than other members of the genus. Has less specialized habitat requirements than congeners, which should render it less vulnerable to disturbance; appears able to survive in large patches of more or less remnant forest. Occurs in several protected areas, e.g. Aparados da Serra, Iguacu, Serra da Canastra and Caraça National Parks, and the Serra da Graciosa highlands, in Brazil, and Iguazú National Park and Uruguá-i Provincial Park, in Argentina. Given its small range, monitoring of populations is recommended. Escarpment forests of N Rio Grande do Sul possibly a major stronghold for this species; protection of a significant block of these forests would benefit not only this species, but also a number of other regional endemics with even more restricted ranges.

**Bibliography.** dos Anjos (2001a), dos Anjos & Boçon (1999), Belton (1985), Bencke & Kindel (1999), Buzzetti (2003b), Cory & Hellmayr (1924), Ferreira de Vasconcelos & Melo-Júnior (2001), Ferreira de Vasconcelos *et al.* (1999), Fraga & Narosky (1985), Goerek (1999b), Isler & Whitney (2002), Leme (2001a), Machado (1999), Marini *et al.* (1996), Mazar Barnett & Kirwan (2001), Ridgely & Tudor (1994), do Rosário (1996), Schönwetter & Meise (1967), Scott & Brooke (1985), Sick (1993, 1997), Stotz *et al.* (1996), Zimmer (2003a).

## 128. Scaled Antbird

### *Drymophila squamata*

**French:** Grisin écaillé **German:** Bindenschwanz-Ameisenfänger **Spanish:** Tiluchi Escamoso

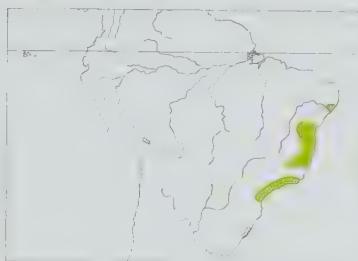
**Taxonomy.** *Myiothera squamata* M. H. K. Lichtenstein, 1823, Bahia, Brazil.

Members of genus form a well-defined clade, and appear to be closely related to *Hypocnemis*. Genetic analysis indicates that race *stictocorypha* may be a separate species; possible differences in vocalizations and ecology remain to be investigated further. Geographical ranges based on plumage, but likely to be revised after other characteristics have been studied. Two subspecies currently recognized.

### Subspecies and Distribution.

*D. s. squamata* (M. H. K. Lichtenstein, 1823) - E Brazil in E Alagoas and E Bahia.

*D. s. stictocorypha* (Boucard & Berlepsch, 1892) - SE Brazil (E Minas Gerais, Espírito Santo, Rio de Janeiro, and E São Paulo S to extreme NE Santa Catarina).



**Descriptive notes.** 12-13 cm; 10.5-11.0 g. Male has black crown with white spots at side, broad white supercilium, black eyestripe; upperparts black, spotted white, wings black, wing-coverts broadly tipped white, tail black, barred white; head side, throat and underparts white, spotted black. Female is patterned like male, but upperparts dark brown and buff, flanks and crissum pale cinnamon. Race *stictocorypha* male typically differs from nominate in having spots on centre of crown, rear underparts darker grey, but these characteristics may overlap between races. **Voice.** Loudsong a series of 5-6 long notes with

shorter spaces between them, delivered in c. 3-5-4 seconds, notes frequency-modulated and unclear, intensity and pitch usually increasing and then decreasing, note shapes variable, typically initial note rises in frequency and remaining ones downslurred. Calls may vary regionally, include abrupt "pip", often repeated in doublet or rapidly 3-4 times, also short series of c. 4 notes on falling scale, and relatively high-pitched (e.g. 5-5 kHz), short (e.g. 0-6 seconds) rattle decreasing in pitch and intensity.

**Habitat.** Understorey of lowland and foothill evergreen forest and second-growth woodland, from sea-level to 900 m; in lowlands in S of range, but occurs higher in N (e.g. the only *Drymophila* found in highlands of Alagoas). In Serra da Ouricana (Bahia) also occurs in foothills with *D. ferruginea* and *D. ochropyga*, but those two species are restricted to bamboo thickets. The only member of genus not closely associated with bamboo, although degree of association may vary regionally. One study in coastal Bahia found nominate race to be a bamboo specialist, but is not associated with bamboo in foothills of Alagoas and Serra da Ouricana. Race *stictocorypha* often found in bamboo, but seemingly equally common in places that lack bamboo; in coastal lowlands of Rio de Janeiro and São Paulo, particularly common in poorly drained *Heliconia* thickets within forest and occurs in *restinga* woodland in sight of the ocean.

**Food and Feeding.** Little published. Feeds on variety of insects, probably also spiders. Closely associated pair-members, individuals, or family groups forage mostly 0-4 m above ground, sometimes to 6 m; mean foraging height in 267 observations was 2-3 m. Alone, or with mixed-species flocks of other insectivores. Active forager, progressing by short hops, separated by pauses of 0-5-2 seconds to scan for prey; maintains mostly horizontal posture, partially droops wings and habitually flicks them shallowly; clings laterally to slender vertical stems and vines, hitches its way up from side to side with each hop, or maintains single orientation for several consecutive hops before flitting to another stem or vine, eventually flies back down near ground and begins working its way back up. Forages in shaded interiors of trees, close to trunks with lots of hanging vines and philodendrons (*Philodendron*); also on or near ground in dense stands of broad-leaved herbaceous vegetation, and in shaded understorey with abundance of closely spaced, slender vertical stems. Works through fallen branches and mats of dead ferns, leaves and other organic debris on forest floor; also through mostly brown parts of bamboo thickets, and in crowns of understorey shrubs, palms and saplings. Forages along larger tree trunks by hitching up hanging vines, always within 30 cm of trunk, and gleaning from vine surfaces and leaves and petioles of philodendrons and other epiphytes. Most attack manoeuvres are perch-gleans to stem, vine and branch surfaces, less often to tops and bottoms of live leaves; gleans by reaching up, out or down with quick stabs of the bill, or by short, horizontal lunges; also makes frequent short (15-30 cm) sallies or hover-gleans, and even shorter jump-gleans to underside of overhanging vegetation; rarely scans or probes suspended dead leaves. Foregoing applies primarily to S populations. Nominative race in Alagoas seldom seen more than 0-3 m above ground, often hops on ground and makes jumping, nearly vertical sallies of 10-30 cm to undersides of large green leaves, almost in manner of an antipit (*Corythopis*); also hitches up slender vertical stems and over fallen branches like S birds. All populations sally-glean more than do other Atlantic Forest congeners; in one study, 68% of attack manoeuvres by nominate race were gleans and 29% were sallies, compared with 59% gleans and 39% sallies for race *stictocorypha*. Nominative race occasionally follows army ants (*Eciton burchelli*); in six recorded instances in Bahia, foraging attempts over ants were short sallies to leaves or pecks at leaves and vines, and birds did not linger over slow-moving ants but, instead, circled away from them repeatedly.

**Breeding.** Four nests found: in Alagoas in Oct, in SE Bahia in Dec, and in São Paulo in Nov (two). In São Paulo, one described as a basket, external diameter 7-6 cm, external height 5-5 cm, constructed from leaves and fibres, decorated sparsely with moss around rim, lined with fibres and roots, a long woven strip of thin leaves and fibres (c. 5 times as long as nest height) attached to rear of nest perhaps as camouflage or decoration, tied to two parallel horizontal branches 40 cm up in small bush in thin undergrowth of *restinga* woodland; the other measured 9 × 6-2 cm, height 8-7 cm, made with green moss, dead bamboo leaves and strands of *Marasmius*, with large dead leaves hanging from it, placed 47 cm above ground on horizontal fork in shrub in 20-m rainforest; nests in SE Bahia (Dec) and Alagoas (Oct) also placed on horizontal fork and made of dead leaves (of Cyperaceae), green moss and *Marasmius*, but apparently not decorated with leaves, respective sizes 8-2 × 6-8 cm and 8 × 8 cm, heights 8 cm and 7-5 cm, and built 52 cm and 1-91 m above ground. At São Paulo nest, clutch 2 eggs (one had hatched at time of discovery), whitish with brown blotches, in 1 day's observation male contributed 67% of food delivered and brooded young 60% of daylight time, female brooded at night; in Alagoas and SE Bahia, eggs white, covered with wine-coloured spots and vermiculations; other eggs described as whitish, with flecks noted variously as dark cherry-brown, brownish-red and blackish.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout most of its range. Regions in which species occurs include a number of protected areas, e.g. Murici Ecological Reserve, Sooretama Biological Reserve, Tijuca and Serra da Bocaina National Parks and Serra do Mar State Park. Probably most common at base of the Serra do Mar in lowlands of N São Paulo, particularly around Ubaituba; much of this area falls under the umbrella of Serra do Mar State Park, which, like many of the other Atlantic Forest reserves, would greatly benefit from more rigorous protection of its boundaries from hunters and wood-cutters. Continued protection of this park, and of other existing parks/reserves containing populations of this antbird, should ensure the long-term survival of the species.

**Bibliography.** Aleixo (1999), Buzzetti (2003b), Cory & Hellmayr (1924), Goerek (1999a, 1999b), Gonzaga *et al.* (1995), Isler & Whitney (2002), Lopes *et al.* (1980), Machado (1999), Marini *et al.* (1996), Mendonça (2000), Naka *et al.* (2000), Naumburg (1939), Parker (2003a), Parker & Goerek (1997), Pinto (1935), Ribon & Maldonado-Coelho (2001), Ridgely & Tudor (1994), Scott & Brooke (1985), Sick (1993, 1997), Stotz (1990b), Stotz *et al.* (1996), Teixeira *et al.* (1986), Willis (1985a), Zimmer (2003a).



## 129. Striated Antbird

*Drymophila devillei*

French: Grisin de Deville

Spanish: Tiluchi Estriado Occidental

German: Weißbauch-Ameisenfänger

**Taxonomy.** *Formicivora devillei* Menegaux and Hellmayr, 1906, north-east Peru; error = Cuzco, south-east Peru.

Members of genus form a well-defined clade, and appear to be closely related to *Hypocnemis*. Present species most closely related to *D. caudata*. Recent genetic study indicated substantial differentiation between populations E & W of R Madeira, and possibility that more than one species involved. Two subspecies recognized.

**Subspecies and Distribution.**

*D. d. devillei* (Menegaux & Hellmayr, 1906) - SC Colombia (W Meta, W Putumayo), NE Ecuador (W Napo), SE Peru (Ucayali, E Cuzco, Madre de Dios), SW Amazonian Brazil (W of R Madeira in W Amazonas and Acre) and NW & C Bolivia (Pando, La Paz, Cochabamba).

*D. d. subochracea* Chapman, 1921 - SC Amazonian Brazil (E of R Madeira and R Mamoré in E Amazonas, Rondônia, W & N Mato Grosso and W Pará) and NE Bolivia (NE Santa Cruz).

**Descriptive notes.** 13-14 cm; 10-12 g. Male has crown and anterior upperparts black, streaked white, white interscapular patch, rump deep rufous; wings black, flight-feathers edged rufous, coverts tipped white; graduated tail black, white tips and intermediate spots; head side down to lower breast white, streaked black, throat and belly white, flanks and crissum rufous. Distinguished from similar *D. caudata* by no rufous tinge on back, blacker tail shorter and having intermediate spots, unstreaked throat, less heavy streaks below. Female is like male, except white of upperside other than tail replaced by light rufous-buff and black replaced by blackish-brown,

no interscapular patch, underside tinged rufous-buff, flanks paler. Juvenile is olive-grey above, tinged rufous posteriorly, white below, tinged buff, olive-grey breastband; subadult male resembles female. Race *subochracea* differs from nominate in more uniformly ochraceous buff to rufous-buff underparts, paler on throat and belly, ochraceous wing edgings, female also more ochraceous. **VOICE.** Male loudsong a moderately long series (e.g. 17 notes, 3 seconds), 2 weak introductory notes followed by 3 emphatic long raspy notes, then rapid accelerating series of clear notes rising and falling in pitch; race *subochracea* similar in pattern, but emphasized notes clear rather than raspy; female loudsong resembles male's but typically weaker, with emphasized notes coming later in series. Call a doublet, sometimes triplet, of moderately long (e.g. 0.1-3 seconds) whistles, also similar note but harsh in quality.

**Habitat.** Understorey and mid-storey of thickets of *Guadua* bamboo in lowland and foothill evergreen forest, to 1000 m. Apparently an obligate bamboo specialist; absent from areas lacking sufficient density of bamboo. Appears to prefer bamboo patches growing under, or surrounded by, trees.

**Food and Feeding.** Feeds on various insects, particularly lepidopteran larvae; probably also on spiders. Closely associated pair-members, individuals, or family groups forage mostly 5-10 m above ground, occasionally down to 2 m and up to 20 m; in Peru (Madre de Dios), mean height in 62 observations was 6.5 m and in 155 observations at a nearby site 6 m. Alone, or sometimes joining mixed-species flocks of other insectivores as these move through its territory. Forages actively, progressing rapidly by short hops, separated by pauses of 1-3 seconds to scan for prey; as it moves, habitually flicks both wings shallowly, wags tail up and down in shallow arc; somewhat erratic in movements, usually following zigzag course with abrupt changes of direction and frequent retracing of routes. Forages mostly in shaded crowns of bamboo and ambient vine tangles; hops rapidly along vines and horizontal limbs, hitches from side to side as it makes its way through horizontal perches and up vertical bamboo stalks. Most prey perch-gleaned from live bamboo leaves (mostly from undersides) and stems, vines, and clusters of bamboo spines, usually by reaching up, out or down with quick stabs of the bill, or by short, horizontal lunges; often makes short (less than 30 cm) fluttering sallies or jump-gleans to underside of overhanging vegetation. Regularly scans small, suspended dead leaves (mostly of bamboo); usually probes curled dead leaves delicately with its bill, sometimes tears apart small dead leaves to extract hidden prey. Not known to follow army ants.

**Breeding.** Little known. Female seen to enter apparently domed nest in bamboo; in Brazil, territory size at Cachoeira Nazaré (Rondônia) estimated at 0.3 ha, at Alta Floresta c. 0.5 ha.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Locally fairly common within its patchy range. Nominant race fairly common to common in some large protected areas in S portion of range, e.g. Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, and Serra do Divisor National Park, in Brazil, but rare and local in N. Race *subochracea* known from Noel Kempf Mercado National Park, in Bolivia, and Cristalino State Park, in Brazil, but large gaps exist between other known localities, and intervening regions either lack sufficient bamboo or, in some cases, have not been adequately surveyed; given the few sites from which this race is known, combined with its dependence on a specific and patchily distributed habitat, this taxon should be monitored for signs of decline.

**Bibliography.** Alverson *et al.* (2000), Bates *et al.* (1999), Cadena, Álvarez *et al.* (2000), Cory & Hellmayr (1924), Foster *et al.* (1994), Goerck (1999b), Goerck *et al.* (1998), Hackett & Rosenberg (1990), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Kratter (1997a), Kratter *et al.* (1992), Navarrete *et al.* (2002), Novaes (1976), Parker (1982, 2003a, 2003b), Remsen (2003b), Ridgely & Tudor (1994), Servat (1996), Sick (1993), Stotz (1990a), Stotz *et al.* (1996), Terborgh *et al.* (1984), Zimmer, J.J. (1931b), Zimmer, K.J. (2003a), Zimmer, K.J., Parker *et al.* (1997).

## 130. Long-tailed Antbird

*Drymophila caudata*

French: Grisin à longue queue

German: Langschwanz-Ameisenfänger

Spanish: Tiluchi Colilargo

**Taxonomy.** *Formicivora caudata* P. L. Slater, 1855, "Bogotá" = possibly west slope of east Andes, Colombia.

Members of genus form a well-defined clade, and appear to be closely related to *Hypocnemis*. Present species most closely related to *D. devillei*. Genetic analysis and geographical variation in vocalizations indicate that further study and redefinition of populations is still needed. Relationships among currently defined races unclear at N end of E Andes (Norte de Santander, in Colombia), where three races may be parapatric or may intergrade. Four subspecies currently recognized.

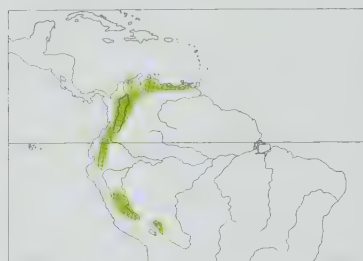
**Subspecies and Distribution.**

*D. c. klagesi* Hellmayr & Seilern, 1912 - N Venezuela (except Sierra de Perijá) and N Colombia (E slope of E Andes in S Norte de Santander).

*D. c. aristeguietana* Avelledo & Pérez, 1994 - NW Venezuela (Sierra de Perijá).

*D. c. hellmayri* Todd, 1915 - N Colombia (Santa Marta region and E slope of E Andes in N Norte de Santander).

*D. c. caudata* (P. L. Slater, 1855) - Andes of Colombia (except N end of E range on E slope), Ecuador (both slopes), Peru (E slope) and NW Bolivia (E slope in La Paz).



**Descriptive notes.** 14.5-15.5 cm; 11-13 g. Male nominate race has crown and anterior upperparts black, streaked white, back streaks tinged rufous, white interscapular patch, rump deep rufous; wings black, flight-feathers edged rufous, coverts tipped white; graduated tail blackish-grey, white tips; head side and throat down to lower breast white, heavily streaked black, belly white, flanks and crissum rufous. Distinguished from similar *D. devillei* by pale streaks on back tinged rufous, longer and paler tail lacking intermediate spots, streaked throat, more heavily streaked anterior underparts. Female differs from male

in having crown streaks cinnamon-rufous, other pale markings above (except on tail) light rufous-buff rather than white, black areas duller, no interscapular patch, underside tinged rufous-buff, flanks paler. Race *hellmayri* has tail dusky, tinged rufous, wide blackish subterminal bar, male rear central crown solidly black; *klagesi* is similar to previous, but centre of throat and breast with no or only faint spots, female flanks paler; *aristeguietana* reportedly differs from last in heavier streaking, lighter rufous coloration. **VOICE.** Typical male loudsong 2 short clear whistles followed by 2 long raspy notes, but number of each, also shape, length and quality of notes, vary regionally and individually; typical female loudsong a short series of whistles dropping in pitch, sometimes terminating in harsh note. Calls include variety of high-pitched (e.g. 5 kHz) short whistles, sometimes in abrupt pairs.

**Habitat.** Understorey and mid-storey of bamboo thickets (both native and introduced Asian species) in montane evergreen forest and secondary forest, mainly from 1200 m to 2500 m; mostly 800-1600 but occasionally down to 300 m in Venezuela, as low as 750 m in Ecuador, and as high as 2700 m in Colombia. Also away from bamboo in vine tangles, shrubby forest borders, and overgrown coffee fincas. Although less restricted to bamboo than are most congeners, is found more frequently in it than away from it.

**Food and Feeding.** Feeds on variety of insects, probably also spiders; stomach contents included lepidopteran larvae and a small beetle (Coleoptera). Closely associated pair-members, individuals, or family groups forage mostly 1-15 m above ground; alone or, sometimes, with mixed-species flocks as these pass through its territory. Active forager, progressing by short hops, with pauses of 1-3 seconds between movements to scan for prey. In most areas, forages primarily in bamboo, hitching from side to side up vertical stems to crowns, where bamboo foliage, vines and upper branches of understorey trees form interlacing mats or sprays of foliage; also in densely foliated shrubs, thickets and hillside stands of bracken-fern. Perch-gleans most prey from live and dead bamboo foliage, stem surfaces, nodes and clusters of spines, by reaching up, out or down with quick stabs of the bill, or by short, horizontal lunges; frequently jump-gleans or makes short (less than 30 cm) fluttering sallies to underside of overhanging vegetation; when gleaning from bamboo leaves or from broad-leaved plants, most often takes items from undersurface. Not known to follow army ants.

**Breeding.** Almost nothing known. Breeding reported in Jun in Venezuela; season likely to vary across extensive range.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common but locally distributed throughout range. Occurs in several protected areas, e.g. Munchique National Park and La Planada Nature Reserve, in Colombia. The ability of this species to utilize some second-growth habitats may render it less vulnerable than other members of the genus.

**Bibliography.** Avelledo & Pérez (1994), Bates *et al.* (1999), Cory & Hellmayr (1924), Ejlsd & Krabbe (1990), Goerck (1999b), Goerck *et al.* (1998), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Meyer de Schauensee (1966), Meyer de Schauensee & Phelps (1978), Parker & Carr (1992), Ridgely & Tudor (1994), Schäfer & Phelps (1954), Schulenberg & Awbrey (1997a), Stotz *et al.* (1996), Thomas (1993), Zimmer, J.T. (1931b), Zimmer, K.J. (2003a).







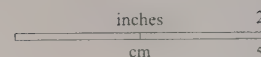


PLATE 58

Family THAMNOPHILIDAE (TYPICAL ANTBNRDS)  
SPECIES ACCOUNTS

Genus *TERENURA* Cabanis & Heine, 1859

131. Streak-capped Antwren

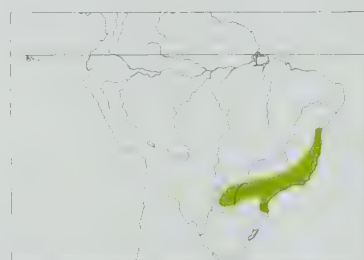
*Terenura maculata*

French: Grisin à tête rayée German: Rostrücken-Ameisenfänger Spanish: Tiluchi Enano

**Taxonomy** *Myiothera maculata* Wied. 1831, no locality - Rio de Janeiro, Brazil. Forms a superspecies with *T. sieki*; further analysis of molecular, vocal and other characteristics that may differentiate them is needed. Monotypic.

**Distribution** SE Brazil (coastal region from SE Bahia S to Santa Catarina, inland locally in S Minas Gerais, São Paulo and Paraná), E Paraguay (Canendiyu S to Caazapa) and extreme NE Argentina (Misiones).

**Descriptive notes** 9-10 cm; 1 individual 6.5 g. Male has crown to upper back streaked black and white; remaining upperparts tawny, mixed with yellow posteriorly, hidden white patch under scapulars; wings black, flight-feathers edged pale yellow, tertials edged tawny, coverts broadly tipped white



(sometimes tinged yellow); tail olive-grey; throat and upper breast white, streaked black, lower breast yellow, streaked black, posterior underparts yellow. Female is like male but paler, white on head and throat tinged pale buff, underpart streaking less distinct. **VOICE.** Loudsong a long (e.g. 3.8 seconds) dry rattle gaining in intensity at beginning, generally (but unevenly) rising in pitch. Calls include sharp "chip" and slightly longer, lower-pitched downslurred note, each delivered singly or in short series of 3-5, or the two often combined in distinctive lengthy series and either alternating or one note alternating with two of the other.

**Habitat.** Canopy and mid-storey of evergreen forest and second-growth woodland, from sea-level to 1250 m.

**Food and Feeding.** Little published. Feeds on insects, probably also spiders. Closely associated partners, individuals, or family groups forage mostly from 6 m above ground to the canopy, sometimes down to ground; often lower than congeners, particularly at forest edge and in second-growth woodland (including overgrown, regenerating banana plantations). Either alone or, more often,



with mixed-species flocks of other insectivores; this species and *T. sicki* are less habitual flock-followers than are other congeners. Very active, restless forager, progressing by short hops, seldom pausing for more than 1 second to scan for prey; forages in dense, small foliage in crowns of trees and, especially, in masses of vine tangles along trunks and overtopping understory trees, also in mats of vegetation formed by interlaced crowns of arching bamboo (*Merostachys*). Perch-gleans most prey from tops and bottoms of live leaves, leaf petioles, stems, and vine surfaces, by reaching up, out or down with quick stabs of the bill, or by short, horizontal lunges; acrobatically hangs head first or upside-down, often from leaf margins in manner of a greenlet (*Hylophilus*), to glean from upper surface of lower leaves; also makes occasional short (less than 40 cm) hover-gleans or sallies to underside of overhanging vegetation. Regularly scans suspended dead leaves, probes curls lightly with its bill, but does not otherwise manipulate the leaf, and more often ignores dead leaves altogether. Not known to follow army ants.

**Breeding.** Nest found in Oct in Brazil (above Camaça, in Bahia; details previously unpublished): a small, pendent cup/bag, c. 5 cm deep, 2-5 cm across, paler than surrounding leaves which hid it, placed 5 m above ground in fork near end of thin branch of tree c. 9 m tall at edge of disturbed forest on steep slope; adult video-taped as it took food to nest. Clutch size not documented; eggs covered with dark brown and lilac-grey spots, ground colour uncertain.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of its range. Region inhabited includes several protected parks and reserves, e.g. Itatiaia, Tijuca, Iguaçu, Serra da Bocaina and Serra dos Órgãos National Parks, Augusto Ruschi and Sooretama Biological Reserves and Serra do Mar State Park, in Brazil, and Iguazú National Park in Argentina. Not reliant on primary forest, which further lessens its vulnerability.

**Bibliography.** Aleixo (1999), Cory & Hellmayr (1924), Isler & Whitney (2002), Machado (1999), Naka *et al.* (2000), Parker (2003a), Parker & Goerck (1997), de la Peña (1988), Ridgely & Tudor (1994), do Rosário (1996), Schönewetter & Meise (1967), Scott & Brooke (1985), Sick (1993, 1997), Teixeira & Gonzaga (1983a), Teixeira *et al.* (1989), Whitney (2003b), Zimmer (2003a).

## 132. Orange-bellied Antwren

### *Terenura sicki*

**French:** Grisin de Sick **German:** Schwarzrücken-Ameisenfänger **Spanish:** Tiluchi de Sick  
**Other common names:** Alagoas Antwren

**Taxonomy.** *Terenura sicki* Teixeira and Gonzaga, 1983, Serra Branca, Murici, Alagoas, Brazil. Forms a superspecies with *T. maculata*; further analysis of molecular, vocal and other characteristics that may differentiate them is needed. Monotypic.

**Distribution.** NE Brazil in E Pernambuco and E Alagoas.



**Descriptive notes.** 9.5-10.5 cm; 6.5-7 g. Male has forehead to upper mantle black, streaked white; rest of upperparts black with few white streaks, hidden white patch under scapulars; wings black, flight-feathers edged pale, coverts broadly tipped white; tail blackish; throat and underparts white. Female differs from male in rufous back and rump, white parts of head tinged pale buff, orange underparts. Voice: Loudsong a long dry rattle, calls a sharp "chip" and slightly longer, lower downslurred note; both similar to those of *T. maculata*.

**Habitat.** Canopy and subcanopy of semi-humid upland evergreen forest, at 200-550 m.

**Food and Feeding.** Little published. Feeds on variety of small insects, probably also spiders; stomach contents of holotype included beetles (Coleoptera) and cockroaches (Blattaria). Closely associated pair-members, individuals, or family groups forage mostly 7-20 m above ground, occasionally down to 5 m; alone or, more often, with mixed-species flocks of other insectivores. Very active and restless, progresses by short hops, seldom pauses for more than 1 second to scan; forages mostly in vines and creepers hanging along major trunks, as well as in crowns and terminal twiggy branches of mid-storey and emergent trees; when moving to another tree, often flies directly into a woody vine tangle at mid-height up trunk, hitches its way up slender hanging vines for several metres, then finally drifts towards crown or peripheral branches, before changing to yet another tree. Perch-gleans prey from tops and bottoms of live leaves (often large ones), leaf petioles, stem and vine surfaces, by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; regularly hangs head first or upside-down to glean prey from tops of lower leaves; also makes short (less than 30 cm) hover-gleans to underside of overhanging vegetation; frequently flutters abruptly down for several metres in pursuit of flushed prey. Occasionally scans dead leaves and probes lightly into the curl with its bill, but more often passes these by without inspection. Not known to follow army ants.

**Breeding.** Nest-building observed in Nov; on basis of gonadal and moult condition of specimens, season thought to start in Nov and continue into Feb. Nest found in final stages of construction, a small cup 8.2 cm long, 5.6 cm wide, 4.9 cm deep, similar in general shape to nests of *Thamnophilus* and *Dysithamnus*, contained moss and some filaments of *Marasmius* fungi, suspended c. 10-12 m above ground from fork of nearly horizontal branch among dense foliage of mid-storey tree. Juveniles join adults in mixed-species flocks in Feb.

**Movements.** Resident.

**Status and Conservation.** **ENDANGERED.** Restricted-range species: present in Atlantic Slope of Alagoas and Pernambuco EBA. Locally uncommon to fairly common. Known from only a handful of forest fragments in foothills of Alagoas and Pernambuco; total range estimated at a mere 120 km<sup>2</sup>. Global population thought to number 1000-2500 individuals, and assumed to be declining as result of ongoing habitat destruction. Considered fairly common at Murici, uncommon at Usina Serra Grande, and regularly recorded at Pedra Talhada, with additional records from Novo Lino (1986) and Água Azul (1989); two of these areas, the Murici Ecological Reserve (also known as Pedra Branca, Serra Branca and, in part, Fazenda Bananeira; combined fragments estimated in 1995 to cover c. 3000 ha) and Pedra Talhada State Park (4469 ha), are in theory protected. Protection at latter is enforced by guards, and significant areas within the reserve are being reforested with native trees; reserve at Murici, however, is privately owned, and was still being selectively logged in Jan 2000, with several new jeep paths cut through the forest to remove timber. Selective logging a major threat, since this species has been shown not to persist in degraded second-growth woodland. Clear-cutting and burn-

ing of second-growth forest is also continuing around edges of Murici Reserve, and has successively reduced extent of forest each year since 1996. True protection of this key area (the type locality) is critical for the long-term survival of this species, as well as that of other threatened endemics such as *Myrmotherula snowi* and the Alagoas Foliage-gleaner (*Philydor novaesi*), both of which are known only from the Murici Reserve. Most of Alagoas has already been deforested (estimated 2% of original forest remains), primarily for sugar-cane production. This antwren has not been found in remaining patches of lowland forest near coast; as several other special birds of the region, it appears to be part of a unique upland avifauna. In addition to enforced protection of existing reserves, surveys to locate additional patches of ridgetop forest with populations of this and other regional endemics need to be undertaken as a matter of priority. Usina Serra Grande is another potential key reservoir for this species; as such, its protection should also be ensured.

**Bibliography.** Anon. (2000a, 2001b, 2002a), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Isler & Whitney (2002), Ridgely & Tudor (1994), Sick (1993, 1997), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Teixeira (1987b), Teixeira & Gonzaga (1983a), Teixeira, Nacinovic & Luigi (1988), Teixeira, Otoch *et al.* (1993), Wege & Long (1995), Willis & Weinberg (1990), Zimmer (2003a).

## 133. Rufous-rumped Antwren

### *Terenura callinota*

**French:** Grisin à croupion roux **German:** Rostbüzel-Ameisenfänger **Spanish:** Tiluchi Lomirrufo  
**Other common names:** Perija Antwren (Venezuelana)

**Taxonomy.** *Formicivora callinota* P. L. Selater, 1855, "Bogotá" = probably nearby Cundinamarca, Colombia.

Closely related to *T. humeralis* and *T. sharpei*. Includes "*Hylophilus puella*", original description of which was based on a female of present species. Races exhibit minimal differences in plumage, but appear to be isolated geographically from one another; *venezuelana* has sometimes been treated as a separate species. Recent records in Mérida and Barinas (W Venezuela) presumed to relate to latter race; further study required. Four subspecies recognized.

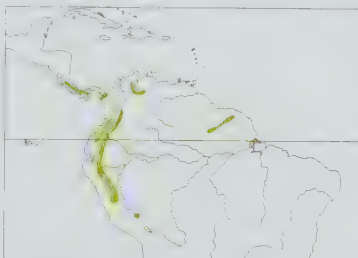
**Subspecies and Distribution.**

*T. c. callinota* (P. L. Selater, 1855) - Costa Rica (Caribbean slope S from S Alajuela), Panama (Chiriquí, Bocas del Toro, Veraguas, E Darién), Colombia (locally from Valle del Cauca and Cundinamarca S to Nariño and W Caquetá), Ecuador (both slopes, on Pacific S to El Oro) and N Peru (Piura, Cajamarca, Amazonas).

*T. c. venezuelana* Phelps, Sr. & Phelps, Jr., 1954 - NW Venezuela in Sierra de Perijá; also, recent sight records in Mérida and Barinas.

*T. c. guianensis* Blake, 1949 - S Guyana and C Surinam.

*T. c. peruviana* Meyer de Schauensee, 1945 - C Peru (S of R Marañón, from San Martín S to Junín, also S Cuzco).



**Descriptive notes.** 9.5-10.5 cm; 7-8 g. Male has black crown and nape, whitish supercilium, thin dark line through eye; back olive, rump cinnamon-rufous, uppertail-coverts olive-yellow, tail greyish olive-brown; wings blackish-grey, tinged olive, flight-feathers edged pale olive-yellow, greater and median coverts tipped pale yellow, bend of wing and hidden patch under scapulars yellow; side of head, throat and anterior underparts pale grey, lower underparts yellow. Female resembles male, but crown, nape and eyeline olive-brown, supercilium pale grey, no hidden patch under scapulars, wings dark olive-brown. Race *peruviana* has yellow below extending up into

lower breast; *guianensis* has rump rufous-chestnut, hidden patch under scapulars reduced or absent; *venezuelana* female has back olive-grey, throat and underparts whiter. Voice: Loudsong in Colombia a series (e.g. 26 notes, 2-6 seconds) of initially distinct, countable notes that rise in pitch and shorten in length to become high-pitched trill; in Central America loudsong slower, notes more countable. Call high-pitched and abrupt, sometimes in short series in which final notes descend in pitch.

**Habitat.** Canopy and subcanopy (often lower at forest edge) of montane evergreen forest, at 600-2400 m; 750-1200 m in Costa Rica and Panama. In Costa Rica confined to the wettest, most moss-laden forests.

**Food and Feeding.** Little published. Feeds on various insects, including lepidopteran larvae, orthopterans, beetles (Coleoptera); also on spiders. Closely associated pair-members, individuals, or family groups forage mostly from 15 m above ground to the canopy, regularly descending to 6 m at forest edge; almost invariably in company of mixed-species flocks of other insectivores. Very active, restless forager, progresses by short hops, seldom pauses for more than 1 second to scan; in almost constant motion, nervously flicks both wings. Usually forages in terminal leafy branchlets in crowns and outer branches of trees, to lesser extent also in hanging clusters of leafy vines near trunks. Perch-gleans prey from tops and bottoms of live leaves, leaf petioles, twigs, vines and moss, by reaching up, out or down with quick stabs of the bill; frequently hangs acrobatically head first or upside-down from margins of leaves in manner of greenlets (*Hylophilus*) to glean prey from top surfaces of lower leaves. Not known to follow army ants.

**Breeding.** Almost nothing known. Season in Costa Rica probably Mar-May (as for most insectivores), as indicated by Mar record of female carrying nest material (moss).

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Seemingly uncommon throughout most of its extensive range; in many regions known only from a handful of specimens and sight records, although this tiny, canyon-dwelling bird is easily overlooked. Occurs in La Planada Nature Reserve and Rio Nambi Natural Reserve, in Colombia. Foothill and middle-elevation slopes favoured by this species are often subject to the most intensive pressure from human colonization and cultivation, which could place some populations at risk.

**Bibliography.** Cory & Hellmayr (1924), Fjeldsa & Krabbe (1990), Haverschmidt & Mees (1994), Hilty (1997, 1999, 2003a), Hilty & Brown (1986), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Parker & Carr (1992), Ridgely & Gaulin (1980), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robbins & Ridgely (1990), Robbins *et al.* (1985), Schulenberg & Awbrey (1997a), Stiles (1983a), Stiles & Skutch (1989), Stotz *et al.* (1996), Wetmore (1972), Willis (1988b), Zimmer, J.T. (1932f), Zimmer, K.J. (2003a).



## 134. Chestnut-shouldered Antwren

*Terenura humeralis*

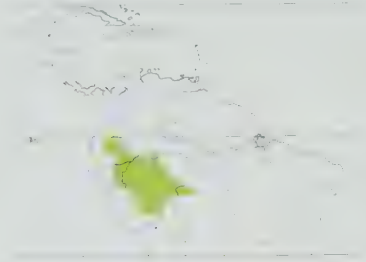
French: Grisin à épaules rousses

Spanish: Tiluchi Hombrocastaño

German: Rotschulter-Ameisenfänger

**Taxonomy.** *Terenura humeralis* P. L. Selater and Salvin, 1880, Sarayacu, Ecuador. Closely related to *T. callinota* and *T. sharpei*. Described race *transfluvialis* based on pair of individuals from single location in W Brazil (Hyutanahan, on R Purus), but more thorough study of geographical variation required before any races regarded as tenable. Monotypic.

**Distribution.** E Ecuador (primarily S of R Napo), E Peru (S of R Napo), SW Amazonian Brazil (S Amazonas E to upper drainages of R Juruá, R Purus and R Madeira and N Rondônia) and NW Bolivia (Pando, La Paz).



**Descriptive notes.** 9.5-10.5 cm; 7-8 g. Male has black crown and nape, whitish supercilium, thin dark line through eye; back greenish-olive, rump rufous-chestnut, tail greyish-olive; wings blackish-grey, tinged olive, flight-feathers edged pale olive-yellow, greater and median coverts tipped whitish, bend of wing and hidden patch under scapulars rufous-chestnut; side of head, throat and anterior underparts pale grey, lower breast to vent pale yellow. Female resembles male, but crown, nape and eyeline olive-brown, supercilium pale grey, no hidden patch under scapulars, wings dark olive-brown, often a trace of chestnut on lesser wing-coverts.

**Voice.** Loudsong a series of initially countable notes rising in pitch and shortening in length to become high-pitched trill, like that of *T. callinota* but possibly slower (e.g. 26 notes, 2.9 seconds).

**Habitat.** Canopy and subcanopy of lowland evergreen forest, to 650 m. Found in both *terra firme* and seasonal forests.

**Food and Feeding.** Little published. Feeds on insects, probably also spiders; observed to take small moths (Lepidoptera), a caterpillar c. 12 mm long, and minute prey too small to be identified. Closely associated pair-members, individuals, or family groups forage mostly from 15 m above ground to the canopy, occasionally down to 8 m or lower at forest edges; almost invariably in company of mixed-species flocks of other insectivores. Moves restlessly and hyperactively through canopy and subcanopy; progresses by short hops, seldom pauses for more than 1 second to scan; forages mostly on terminal branchlets and foliage. Perch-gleans prey from tops and bottoms of live leaves, leaf petioles, vines and twigs, by reaching up, out or down with quick stabs of the bill; often hangs acrobatically; head first or upside-down from leaf margins in manner of greenlets (*Hylophilus*) to glean prey from top surfaces of lower leaves; pursues escaping prey in fluttering and direct flight, and observed capturing prey in air. Occasionally probes dead leaves. Not known to follow army ants.

**Breeding.** Little known. An individual observed as it gathered long strands of moss in Aug in SE Peru (Madre de Dios).

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout most parts of its range. This includes some large protected areas, e.g. Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, Serra do Divisor National Park, in Brazil, and Madidi National Park, in Bolivia; also vast contiguous areas of intact, suitable habitat which, although not formally protected, appear to be in little danger of development in near future. Recent fieldwork has shown species' range to be much more extensive than previously thought, reaching S to Bolivia (at Camino Mucden, in Pando, and at Alto Madidi, in La Paz) and E to Rondônia, in Brazil.

**Bibliography.** Alvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Cory & Hellmayr (1924), Foster *et al.* (1994), Hackett & Rosenberg (1990), Isler & Whitney (2002), Munn (1984, 1985), Parker (1982, 2003a, 2003b), Parker & Bailey (1991), Parker & Remsen (1987), Parker *et al.* (1991), Remsen (1986), Remsen & Parker (1984), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Rosenberg (2003), Servat (1996), Sick (1993), Stotz (1990b), Stotz *et al.* (1997), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Zimmer, J.J. (1932), Zimmer, K.J. (2003a).

## 135. Yellow-rumped Antwren

*Terenura sharpei*

French: Grisin à croupion jaune

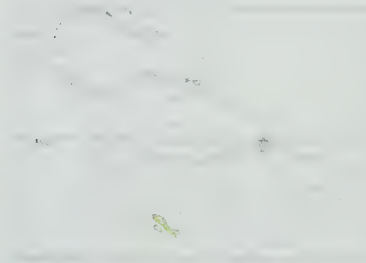
Spanish: Tiluchi Lomigualdo

German: Gelbbürzel-Ameisenfänger

**Taxonomy.** *Terenura sharpei* Berlepsch, 1901, Quebrada Honda, Cochabamba, Bolivia.

Closely related to *T. callinota* and *T. humeralis*. Monotypic.

**Distribution.** E slope of Andes in extreme S Peru (Cuzco, Puno) and W Bolivia (La Paz, Cochabamba).



**Descriptive notes.** 9.5-10.5 cm; 7-8 g. Male has black crown and nape, whitish supercilium, thin dark line through eye; back olive, lower back and rump yellow, tail greyish-olive; wings blackish-grey, tinged olive, flight-feathers edged pale olive-yellow, greater and median coverts tipped whitish, bend of wing and hidden patch under scapulars yellow; side of head, throat and anterior underparts pale grey, lower underparts yellow. Female resembles male, but crown, nape and eyeline olive-brown, supercilium pale grey, no hidden patch under scapulars, lower back and rump yellowish-olive, wings dark olive-brown. **Voice.** Loudsong

a series of initially countable notes rising in pitch and shortening in length to become high-pitched trill, like that of *T. callinota* but may be faster and longer (e.g. 49 notes, 3-6 seconds) and with trill more clearly descending in pitch.

**Habitat.** Canopy and subcanopy of montane evergreen forest, at 750-1700 m.

**Food and Feeding.** Little published. Feeds on insects, probably also spiders. Closely associated partners, individuals, or family groups forage mostly 10-20 m above ground, almost invariably in company of mixed-species flocks; most common flock associates Streaked Xenops (*Xenops rutilans*), Marble-faced Bristle-tyrant (*Pogonotriccus ophthalmicus*), Buff-banded Tyrannulet (*Mecocerculus*

*hellmayri*) and Slate-throated Redstart (*Myioborus miniatus*). Most foraging is in areas of very dense foliage, and almost always within 1 m of outer edge of canopy. Moves very rapidly through foliage, perch-gleaning prey from both surfaces (more commonly from upper surface) of green leaves with frequent lunging and darting movements; also hangs down from twigs to reach upper surface of leaves below. Not known to follow army ants.

**Breeding.** Almost nothing known. Season at Serranía Bellavista (La Paz) thought to be at least Jun-Jul; male with enlarged testes in late Jun; female-plumaged bird on 25th Jun may have been recently fledged juvenile; frequent song noted in Jun and early Jul.

**Movements.** Presumed resident.

**Status and Conservation.** ENDANGERED. Restricted-range species; present in Bolivian and Peruvian Lower Yungas EBA. Has very small range, but within region where there are several large, recently established protected areas containing appropriate habitat. Notable among these are Manu National Park and Biosphere Reserve (numerous recent documented reports) and Tambopata-Candamo Reserved Zone (current boundaries encompass locality of a specimen from late 19th century), in Peru, and Madidi National Park and Integrated Management Area, Ambo National Park, Bellavista Protection Forest Reserve and Carrasco National Park, in Bolivia. Predicted that more extensive surveys will locate additional populations of this threatened species within these protected areas. Widespread habitat loss in upper tropical zone along Amazonian slope of Andes poses major threat to a number of birds restricted to this elevational zone. Much of the large-scale clearance of forest for, especially, coffee, citrus, tea and coca, occurs slightly below this species' elevational range, but clearance for subsistence agriculture by recent colonists from Altiplano extends threat to higher levels.

**Bibliography.** Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), Isler & Whitney (2002), Remsen *et al.* (1982), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz (2003), Stotz *et al.* (1996), Wege & Long (1995), Zimmer (1932).

## 136. Ash-winged Antwren

*Terenura spodioptila*

French: Grisin spodioptila

German: Rotrücken-Ameisenfänger

Spanish: Tiluchi Piojito

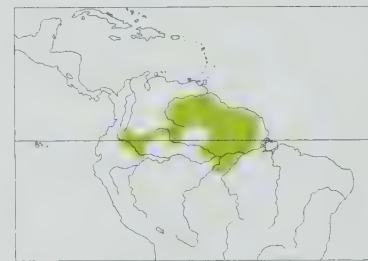
**Taxonomy.** *Terenura spodioptila* P. L. Selater and Salvin, 1881, Bartica Grove, Guyana.

Relationships with others of genus unclear. Race *meridionalis* poorly known. Sight records from Colombia, NE Ecuador and NE Peru tentatively assigned to this species (race *signata*), but further study needed. Birds from French Guiana and adjacent NE Brazil described as race *elaepteryx*, but considered indistinguishable from nominate. Three subspecies recognized.

**Subspecies and Distribution.**

*T. s. signata* J. T. Zimmer, 1932 - SE Colombia (Cauquetá, Guainia), extreme NE Ecuador (Sucumbios N of R Aguatico), NE Peru (Loreto N of R Napo) and NW Amazonian Brazil (upper R Negro region). *T. s. spodioptila* P. L. Selater & Salvin, 1881 - S Venezuela (Amazonas, Bolívar), the Guianas and NE Amazonian Brazil (Roraima, lower R Negro region, N Pará, W Amapá).

*T. s. meridionalis* Sneath, 1925 - SC Amazonian Brazil between lower R Madeira and lower R Tapajós.



**Descriptive notes.** 9.5-10.5 cm; 6.5-7.5 g. Male nominate race has black crown and nape, whitish supercilium, thin dark line through eye; upper mantle grey, remainder of upperparts rufous-chestnut, tail grey-brown; wings black, remiges edged pale grey, greater and median coverts tipped white; entire underparts pale grey, whitest on throat and belly. Female differs from male in having crown and upper mantle yellowish-brown, supercilium, throat, breast and flanks tinged buffy-brown. Subadult both sexes has remiges edged olive-green, underwing-coverts tinged yellowish. Race *signata* male differs from nominate in chest-

nut lesser wing-coverts; *meridionalis* has wing edgings olive, wing-covert tips and belly tinged greenish-yellow. **Voice.** Loudsong of nominate race and of *signata* (in upper R Negro) a long introductory note quickly accelerating into very rapid trill that descends in pitch, ending with 2-3 distinct, countable abrupt notes; loudsongs of *meridionalis* and N Peruvian *signata* lack countable terminal notes, more like that described for *T. callinota*. Call short and abrupt, sometimes in short series in which notes change pitch.

**Habitat.** Canopy and subcanopy of lowland evergreen forest; mostly below 600 m, to 1100 m in Venezuelan tepuis. Primarily in *terra firme* forest.

**Food and Feeding.** Little published. Feeds on variety of insects and spiders; recorded food in Surinam includes ants (Formicidae), hemipterans, homopterans (Jassidae), spiders. Closely associated pair-members, individuals, or family groups forage mostly from 10 m above ground to the canopy, occasionally lower at forest edges, and almost invariably in company of mixed-species flocks of other insectivores. Very active, restless, progressing by short hops, seldom pausing for more than 1 second to scan; in almost constant motion, nervously flicks both wings or opens wings and fans tail. Usually forages in terminal leafy branchlets in crowns and peripheries of trees. Perch-gleans prey from tops and bottoms of live leaves, leaf petioles, twigs and vines, by reaching up, out or down with quick stabs of the bill; frequently hangs acrobatically head first or upside-down from margins of leaves in manner of greenlets (*Hylophilus*) to glean prey from top surfaces of lower leaves; from hanging position, regularly flutters abruptly several metres down to another perch; occasionally sallies to leaf surfaces and probes dead-leaf clusters. Not known to follow army ants.

**Breeding.** Almost nothing known. In Brazil, fledgling begging and flitting in understorey with food-carrying female nearby in Dec (Manaus), and pair collecting strands of moss and pieces of bark in Nov (R Tapajós).

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout its range; easily overlooked. Range encompasses a number of large protected areas, e.g. Canaima, Duida, La Neblina and Yapacana National Parks and Alto Orinoco-Casiquiare Biosphere Reserve, in Venezuela, Brownsberg Nature Park and Raleigh Falls-Voltzberg National Park, in Surinam, and Jaú and Tapajós National Parks and BDFPP INPA forests N of Manaus, in Brazil; also contiguous expanses of intact suitable habitat that are not formally protected, but seem to be at little risk of being developed in near future.

**Bibliography.** Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Friedmann (1948), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Oniki & Willis (1982), Oren & Parker (1997), Parker (2003a, 2003b), Ridgely & Tudor (1994), Sick (1993), Stotz (1990b), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Thiollay (1994), Tostain *et al.* (1992), Willis (1977), Zimmer, J.T. (1932), Zimmer, K.J. (2003a).









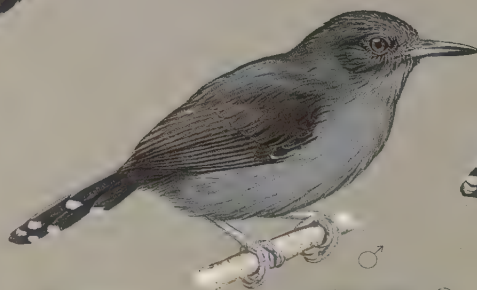
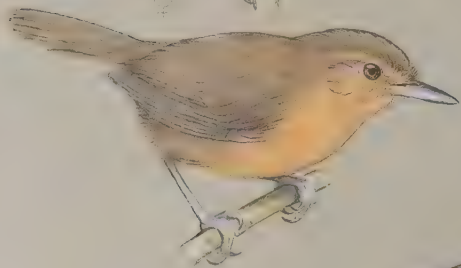
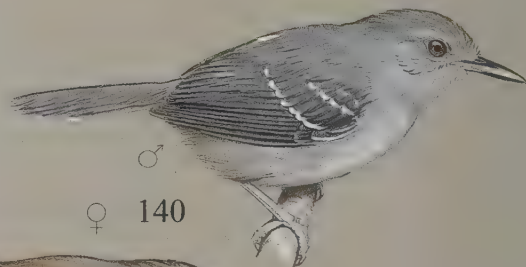
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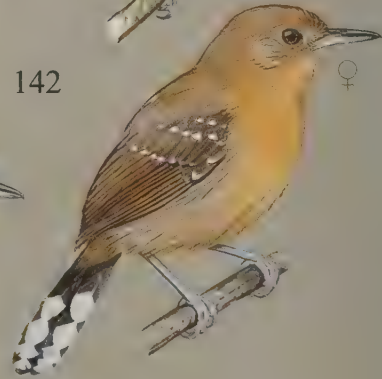


PLATE 59

inches 3  
cm 8



# Genus *CERCOMACRA* P. L. Sclater, 1858

## 137. Blackish Antbird

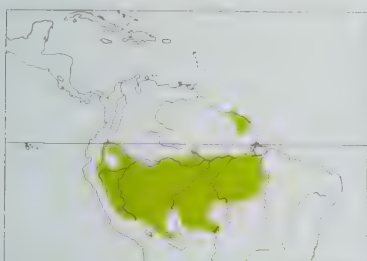
### *Cercomacra nigrescens*

**French:** Grisin noirâtre **German:** Schwarzgrauer Ameisenfänger **Spanish:** Hormiguero Negruzco

**Taxonomy.** *Perenostola nigrescens* Cabanis and Heine, 1859, Cayenne, French Guiana. Considered to form a species group with *C. laeta*, *C. tyrannina*, *C. parkeri* and *C. serva* on basis of plumage and vocal characters, and pending completion of major genetic study. Substantial vocal and distinct plumage differences among some populations of present species suggest that more than one species is probably involved. Racial identity of birds in N Brazil (N bank of R Amazon in E Amazonas and Pará) uncertain; tentatively placed in nominate, but may belong with *approximans* or *fusca*. Races *aequatorialis* and *notata* appear to intergrade. Six subspecies recognized.

#### Subspecies and Distribution.

- C. n. nigrescens* (Cabanis & Heine, 1859) - Surinam (coastal region) and French Guiana; also N bank of R Amazon in Brazil (E Amazonas, Pará).
- C. n. aequatorialis* J. T. Zimmer, 1931 - E Andean slopes from S Colombia (Nariño) S to NE Peru (Amazonas, San Martín).
- C. n. notata* J. T. Zimmer, 1931 - E slopes in EC Peru (W Ucayali S to Junín).
- C. n. fusca* J. T. Zimmer, 1931 - lowlands in E Ecuador, E Peru, extreme SE Colombia (S Amazonas), SW Amazonian Brazil (SW Amazonas, Acre) and NE Bolivia (Pando, La Paz, W Beni, Cochabamba).
- C. n. approximans* Pelzeln, 1868 - SC Amazonian Brazil (from SE Amazonas E to R Tapajós, S to Rondônia and Mato Grosso W of R Teles Pires) and E Bolivia (E Beni, N Santa Cruz).
- C. n. ochrogyna* Sneath, 1928 - EC Amazonian Brazil (Pará E of R Tapajós and W of R Tocantins, Mato Grosso NE of R Teles Pires).



**Descriptive notes.** 14-15 cm; 17-24 g (appears to vary among races, females may weigh less). Male nominate race is blackish-grey; interscapular patch and hidden patch under scapulars white; wing-coverts narrowly edged white at tips. Female has crown and upperparts olive-brown, tinged rufous, interscapular patch white, tail blackish, forehead, face and underparts orange-rufous, tinged olive on flanks. Race *notata* male is paler than nominate, female upperparts more olivaceous, tail light brownish; *aequatorialis* is similar to previous, but male has broader wing-covert tips, female upperparts more rufescent; *fusca* male is

slightly paler than nominate, female crown more tawny and head side less rufescent (creating less contrast), back slightly paler and browner, interscapular patch smaller, *approximans* male is paler than previous, wing-covert tips broader, female browner, covert tips cinnamon; *ochrogyna* resembles previous, but female paler and more ochraceous. **VOICE.** Male loudsong nominate race a single low "wup" followed by short rattle of variable length (e.g. total 6 notes, 0.7 seconds) that usually becomes less intense; males of other races differ in change of pitch of rattle (descends in most regions, but also flat or may rise and fall slightly), in pace, and in change of pace, *fusca* most distinct with rattle condensed into long note dropping in pitch and intensity and sounding like "what cheer"; female loudsong similar in all races, a series of countable "wup" notes (e.g. 5 notes, 1.5 seconds) rising up the scale, notes accelerate slightly or lengthen slightly in some races, often given in duet after start of male loudsong. Call a harsh, unmusical "chirr", variable in length, usually flat but sometimes downslurred.

**Habitat.** Understorey of humid evergreen-forest edge (*terra firme*, transitional, *várzea*), densely vegetated forest light-gaps, and adjacent second-growth woodland, bamboo thickets, vine tangles, revegetating clearings and overgrown plantations; lowlands mostly below 600 m; mostly above 800 m, to 2200 m, in Andes. Lowland populations appear to vary geographically in habitat preferences, but generally in dense vine thickets along streams and forest openings; in some regions concentrated in swampy patches of floodplain *Heliconia*, in others favours bamboo thickets often, but not necessarily, near water. Andean populations in shrubby forest borders and second-growth woodland.

**Food and Feeding.** Little published. Feeds on insects, probably also spiders. Closely associated pair-members, individuals, or family groups forage mostly 0-5 m above ground, occasionally higher; usually alone, but occasionally briefly joining mixed-species flocks of other insectivores as these pass through its territory. Forages mostly within cover of shaded vine-covered shrubs and small trees, bamboo thickets, or dense *Heliconia* thickets, where difficult to observe. Active but methodical forager, progressing by short hops, separated by pauses of a few seconds to scan for prey; clings laterally to slender vertical stems and vines; posture varies from nearly horizontal to three-quarters upright, with tail usually held level with body or slightly cocked, and sometimes swung from side to side, wings regularly flicked; movements somewhat erratic, often follows zigzag course with frequent changes of direction. Most prey perch-gleaned from tops and bottoms of live leaves, from stems, vines and branch surfaces, by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; often makes short jump-gleans, or slightly longer (to 30 cm) fluttering sallies, to underside of overhanging vegetation. Rare observations (Brazil and Ecuador) of following swarms of army ants (*Eciton burchelli*) as these pass through dense second-growth thickets.

**Breeding.** Nothing known; egg description reported from Surinam, but needs confirmation.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Generally fairly common throughout most of its extensive range, which includes a number of large parks and reserves. Conservation status may be altered by outcome of pending taxonomic analyses, which could split this species, as presently constituted, into two or more biological species, thereby fragmenting current extensive range into smaller components, each with its own conservation challenges. None of the currently recognized races, however, appears to be particularly rare or at any immediate risk. Preference of all races for second-growth and edge habitats renders them less vulnerable to disturbance than are most antbirds.

**Bibliography.** Álvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Bierregaard *et al.* (1997), Bond (1950), Cory & Hellmayr (1924), Cox *et al.* (1992), Fitzpatrick & Willard (1990), Foster *et al.* (1994), Haverschmidt & Mees (1994), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Killeen & Schulenberg (1998), Kratter (1997a), O'Neill & Pearson (1974), Oren & Parker (1997), Parker (2003a), Parker & Remsen (1987), Remsen & Parker (1983), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Rosenberg, G.H. (1990), Schulenberg & Awbrey (1997a), Sick (1993), da Silva (1996), da Silva & Oniki (1988), Sneath (1913), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Tostain *et al.* (1992), Willis (1985a), Zimmer, J.T. (1931a), Zimmer, K.J. (2003a).

## 138. Willis's Antbird

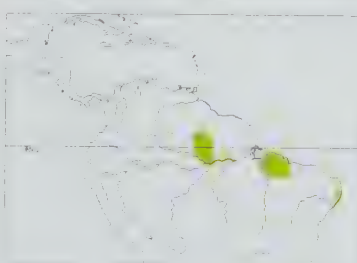
### *Cercomacra laeta*

**French:** Grisin de Willis **German:** Amazonasameisenfänger **Spanish:** Hormiguero de Willis

**Taxonomy.** *Cercomacra tyrannina laeta* Todd, 1920, Benevides, Pará, Brazil. Probably closest to *C. tyrannina* and until recently treated as conspecific. Together with *C. nigrescens*, *C. parkeri* and *C. serva* they are considered to form a species group, on basis of plumage and vocal characters, and pending completion of major genetic study. Three subspecies recognized.

#### Subspecies and Distribution.

- C. l. waimiri* Bierregaard *et al.*, 1997 - NC Amazonian Brazil (E Roraima, NE Amazonas, NW Pará) and extreme S Guyana.
- C. l. laeta* Todd, 1920 - SE Amazonian Brazil (E Pará, W Maranhão).
- C. l. sabinoi* Pinto, 1939 - coastal NE Brazil in Pernambuco and Alagoas.



**Descriptive notes.** 13.5-14.5 cm; 15-17 g. Male nominate race is blackish-grey, somewhat greyer below; interscapular patch white, wing-coverts and outer rectrices narrowly tipped white. Female is olive-grey above and on ear-coverts, wings and tail browner, wing-coverts edged cinnamon, interscapular patch vestigial, throat and underparts tawny-buff, flanks tinged olive. Race *waimiri* male is darker and purer grey than nominate, lacks pale tips on rectrices, female has orange-cinnamon ear-coverts, dark grey wing-coverts with prominent cinnamon-brown edges; *sabinoi* female has underparts variably pale cinnamon. **VOICE.** Male loudsong

an introductory note followed by 4-6 doublets with second note lower-pitched; female a short series of usually 4 notes, notes initially longer than those of male but becoming shorter and rising in pitch, usually given in duet after start of male loudsong.

**Habitat.** Understorey of lowland evergreen-forest edge and taller second-growth woodland, usually near water, to 300 m; to 600 m in E Brazil (*sabinoi*). Nominant race typically inhabits shrubby edges of *várzea* forest or forest bordering small streams; *sabinoi* in tall second-growth borders of lowland and foothill forest, also densely vegetated light-gaps (often with *Heliconia* thickets) within forest, not necessarily near water. In W of range (*waimiri*) is partly sympatric with *C. tyrannina*; seems, at least in region of overlap, to be more associated with white-sand *campina* woodland, occupying shrubby borders of woodland, particularly near streams or in swampy, poorly drained areas.

**Food and Feeding.** Little published. Feeds on variety of insects, including orthopterans and lepidopterans; also on spiders. Closely associated partners, individuals, or family groups forage mostly 0-3 m above ground, usually not associated with mixed-species flocks. Active but methodical forager, progressing by short hops, separated by pauses of a few seconds to scan for prey; posture varies from nearly horizontal to three-quarters upright, with tail usually held level with body or slightly cocked; shallowly flicks both wings as it forages. Forages mostly in dense tangles and thickets; perch-gleans most prey from tops and bottoms of live leaves and from stems, vines and branches, by reaching up, out or down, or by short horizontal lunges; sometimes makes short (less than 30 cm) fluttering sallies to glean items from beneath overhanging vegetation. Occasionally follows army ants (*Eciton burchelli*) as these pass through dense second-growth thickets; rarely follows ants for long periods.

**Breeding.** Little known. Nests found in Feb-Mar in Pará (near Belém). Nest bag-shaped, made of tightly woven and twisted black fibres, with small entrance, placed c. 25-40 cm above ground deep in thicket in second growth, sometimes along streambank. Clutch 2 eggs, white with dark spots and streaks; female incubated at one nest, but incubation probably by both sexes (as in other members of family).

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Nominant race at least locally fairly common; *waimiri* uncommon, and seemingly patchily distributed throughout its broader range; *sabinoi* poorly known, seems to be rare and localized. The ability of all races to exploit second-growth and edge habitats probably renders this species less vulnerable to disturbance than are most antbirds. Patchy nature of its distribution and generally low level of abundance throughout most of its range do, however, suggest that some monitoring is called for. More surveys needed in order better to assess population levels, distributional limits and habitat requirements of all three subspecies.

**Bibliography.** Bierregaard *et al.* (1997), Braun *et al.* (2000), Cory & Hellmayr (1924), Isler & Whitney (2002), Novaes (1969, 1970, 1973), Novaes & Lima (1992), Sick (1993), Sneath (1935), Whittaker (2003a), Willis (1985a), Zimmer (2003a).

## 139. Dusky Antbird

### *Cercomacra tyrannina*

**French:** Grisin sombre **German:** Dunkelgrauer Ameisenfänger **Spanish:** Hormiguero Tirano  
**Other common names:** Tyrannine Antbird

**Taxonomy.** *Pyriglena tyrannina* P. L. Sclater, 1855, "Bogotá" = probably nearby Cundinamarca, Colombia.

Probably closest to *C. laeta*, which formerly treated as conspecific; until recently also included *C. parkeri* as a highland population in Colombia. These three along with *C. nigrescens* and *C.*



*serva* are considered to form a species group, on basis of plumage and vocal characters, and pending completion of major genetic study. At least some of the plumage differences from which races were described appear to be due to clinal variation; analysis of other parameters, including vocalizations, required in order to define geographical populations more accurately, and ranges listed are therefore provisional. Described race *rufiventris* (E Panama S to W Ecuador) considered synonymous with nominate on basis of recent study of plumage variation. Four subspecies recognized.

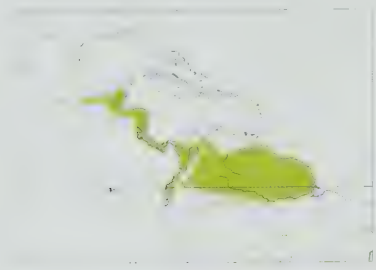
#### Subspecies and Distribution.

*C. t. crepera* Bangs, 1901 - SE Mexico (SE Veracruz, NE Oaxaca and N Chiapas E to S Quintana Roo), Belize, and Guatemala and Honduras (Caribbean slope) S to W Panama (W & C Chiriquí, Bocas del Toro, NW Veraguas).

*C. t. tyrannina* (P. L. Selater, 1855) - C & E Panama (E from E Chiriquí, W Colón and NE Coclé), Colombia (Pacific slope, lower Cauca and Magdalena Valleys, and E of Andes S to R Caquetá), W Ecuador (S to S Guayas, one record in El Oro), S Venezuela (Bolívar, Amazonas) and extreme NW Brazil (N Amazonas W of lower R Negro, S to R Japurá).

*C. t. vicina* Todd, 1927 - NW Venezuela (S Zulia S to Táchira and E to Barinas, NW Apure and W Bolívar) and E slope of Andes in N Colombia (Casanare).

*C. t. saturator* Chubb, 1918 - the Guianas and NE Amazonian Brazil (Roraima and from E of lower R Negro E to Amapá).



**Descriptive notes.** 13.5-14.5 cm; 15-19 g. Male nominate race is slate-coloured above, wings and tail somewhat darker, interscapular patch white, wing-coverts and outer rectrices narrowly tipped white; slightly paler below, palest on chin, tinged clay colour posteriorly; iris rich chocolate-brown. Female has crown, upperparts and wings dark olive-grey, tinged tawny, interscapular patch vestigial, wing-coverts edged cinnamon, tail dark greyish-brown, supercilium, throat and underparts tawny-buff, flanks tinged olive. Juvenile resembles female until 1 year old; iris grey to grey-brown in first year, brown in second year, becoming chocolate-brown in third year. Race *crepera* male is blacker, pale tips of wing-coverts and tail reduced in width, female wings more rufescent; *vicina* male is more clearly brownish-olive on wings, tail and flanks; *saturator* male is blacker, crissum feathers tipped white, usually some white tips on centre of breast, female greyer above. **VOICE.** Male loudsong typically a series of relatively short notes at even pitch and pace except for lower-pitched initial and terminal notes, geographically variable in number of notes, length of individual notes, pace and constancy of pitch (e.g. 8 notes in 1 second in Mexico, 22 notes in 2 seconds in Guyana); female loudsong a series of long notes rising in pitch followed by series of abrupt notes typically remaining at same pitch, varies in number of long notes and of short notes, length of individual notes and constancy of pitch (e.g. 9 notes in 1-7 seconds in Mexico, 14 notes in 3-1 seconds in Surinam); unmated individuals of each sex deliver a "courtship song" that includes elements of the other gender's loudsong. Calls may also vary geographically, include 1-6 soft abrupt "chip" notes that usually shift in pitch in multiple-note calls, and short rattle or "chirr".

**Habitat.** Thick understory of lowland and foothill evergreen forest at edges of clearings, stream edges, shrubby forest borders, also secondary forest with dense bushes and vines. Mostly below 1200 m, locally to 1900 m; in Central America mostly below 750 m, occasionally to 1200 m, rarely higher in Panama; in Colombia to 750 m (records at 1130-1830 m appear all to refer to *C. parkeri*); in Ecuador mainly below 800 m, locally to 1400 m. Seldom ventures far into interior of forest; also seldom present in second growth if not bordering taller woodland or forest.

**Food and Feeding.** Feeds on variety of insects, including beetles (Coleoptera), lepidopteran larvae, wasps (Hymenoptera), hemipterans, homopterans, orthopterans; also on spiders. Stomach contents from Panama included orthopterans, cockroaches (Blattellidae), caterpillars, beetles (including Cerambycidae), ants (Formicidae), spiders; from Surinam beetles, orthopterans, spiders. Closely associated partners, individuals, or family groups forage mostly 0-5 m above ground; rarely and only briefly joins mixed-species flocks as these move through its territory, although in Panama associates occasionally with *Myrmeciza longipes*, with which it often shares territory. Active but methodical forager, progressing by short hops, with frequent pauses of 1-3 seconds to scan for prey; posture varies from nearly horizontal to three-quarters upright, with tail usually held level with body, and often shallowly flicks both wings as it forages; clings laterally to slender vertical stems and vines, usually hitching upwards from side to side. Forages mostly in shaded thickets and vine tangles, sometimes on ground. Perch-gleans most prey from tops and bottoms of live leaves and from stems, vines and branch surfaces, by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; also makes short (usually less than 30 cm) fluttering sallies and even shorter jump-gleans to take prey from underside of overhanging vegetation; seldom hangs or uses other acrobatic manoeuvres. Sometimes probes curled dead leaves, but just as frequently ignores them. In Panama, regularly attends swarms of army ants (*Eciton burchelli*, *Labidus praedator*) moving through dense second growth or scrub along roads, streams or hillside areas, rarely for extended period, but recorded as following ants for up to 185 minutes; takes low (1-3 m) perches on slender vertical stems, most prey captures over ants involving close perch-gleans from leaves, vines, stems and trunks; rarely short sallies to ground, debris, leaves or stems.

**Breeding.** Feb-Oct in Costa Rica and Panama and Aug-Nov in Amazonian Brazil; additional nest and egg descriptions from Nicaragua and Colombia, and additional egg descriptions from Mexico and Venezuela. Nest in Central America a deep pensile pouch with oblique opening near top, thick walls composed of dead leaves, plant fibres, dead blades of grass and strips of palm fronds, suspended by fungal strands and similar, 0.6-3 m above ground from fork of slender drooping tree branch, vine, tall climbing sedge or climbing fern; one in Nicaragua described as globular and pendent, with entrance near top on one side, nearly roofed over, of dry leaves and palm shreds woven together with long shredded stems of ferns (some of these from stems hanging down 46 cm below nest), lined with fine fern stems, placed 2-3 m above ground, the whole resembling a naturally suspended ball of moss; two nests in Brazil looked like bunches of dead leaves, also pouch-shaped, one side of rim lower than other, of dried leaves and web-like rachides and veins of decomposing leaves, tied together by thin black rhizomorphs, lined with large leaves, decaying pieces of palm leaves and few leaf veins and rootlets, suspended 68 cm and 171 cm above ground from tips of thin leguminous vines (*Machaerium*, *Derris*), rim secured to vines by many black rhizomorphs. Normal clutch 2 eggs, in Central America dull white or creamy with reddish-brown or vinaceous-brown (tending to violet) spots, spots all over or confined to or heaviest on larger end, in Brazil (Manaus) light pink, marked with thin faint dark lines and large lilac spots at larger end and towards middle (but not at smaller end); incubation by both parents during day, only by female at night, period 18-20 days in Panama, at least 14 days (exact period not known) in Brazil; both also brood and feed chicks, nestling period c. 11 days in Costa Rica, 9-11 days in Panama. In

an 8-year study in Panama, annual probability of success only 8%, primarily as a result of predation, but 25% in one year; annual survival rate, however, was 82%.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout its extensive range. Regions inhabited by this species encompass numerous protected parks and reserves. Its ability to occupy second-growth thickets and forest edge renders this species less vulnerable to disturbance than are most antbirds.

**Bibliography.** Allen (1998), Bierregaard *et al.* (1997), Blake & Loiselle (1991, 2001), Carriker (1910), Cody (2000), Cohn-Haft *et al.* (1997), Cory & Hellmayer (1924), Derrickson & Morton (1998), Dick *et al.* (1984), Eisenmann (1952), England (2000), Fitzpatrick & Willard (1990), Fleischer & Tarr (1995), Fleischer *et al.* (1997), Graves (1997), Haverschmidt & Mees (1994), Hilty (1997, 2003a), Hilty & Brown (1986), Howell, S.N.G. & Webb (1995a), Howell, T.R. (1957), Huber (1932), Isler & Whitney (2002), Loftin (1975), Mason (1996), Monroe (1968), Morton (1996), Morton & Derrickson (1996), Morton & Stutchbury (2000), Morton *et al.* (2000), Moskovits *et al.* (1985), Novaes (1969, 1970, 1973, 1980), Novaes & Lima (1992), Oniki (1979a, 1979c), Oniki & Willis (1982), Parker & Carr (1992), Richmond (1893), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robinson *et al.* (2000), Rodríguez (1982), Schönwetter & Meise (1967), Schubart *et al.* (1965), Sick (1993), da Silva *et al.* (1997), Skutch (1945a, 1946, 1954, 1955, 1969c), Slud (1960, 1964), Stiles & Skutch (1989), Stiles *et al.* (1995), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Stouffer & Bierregaard (1995), Stutchbury & Morton (1995), Thiollay (1994), Wetmore (1972), Willis (1977, 1980, 1985a, 1988b), Zimmer (2003a), Zimmer & Hilty (1997).

## 140. Parker's Antbird

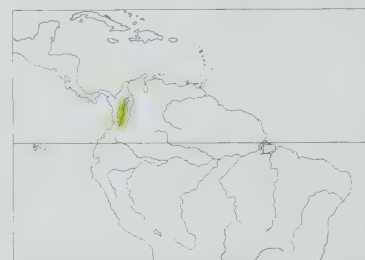
### *Cercomacra parkeri*

**French:** Grisin de Graves **German:** Parkers Ameisenfänger **Spanish:** Hormiguero de Parker

**Taxonomy.** *Cercomacra parkeri* Graves, 1997, La Bodega, Antioquia, Colombia.

Appears closest to *C. tyrannina*, and until recently was treated as a highland population of latter. The two are considered to form a species group with *C. nigrescens*, *C. laeta* and *C. serva* on basis of plumage and vocal characters, and pending completion of major genetic study. Monotypic.

**Distribution.** Andes in WC Colombia (W slope of W range, N & E slopes of C range, probably also W slope of E range).



**Descriptive notes.** 13.5-14.5 cm. Male is slate-coloured above, wings and tail somewhat darker, interscapular patch white, wing-coverts and outer rectrices narrowly tipped white; slightly paler below, chin palest, flanks tending towards olivaceous tinge; iris rich chocolate-brown. Distinguished from extremely similar *C. tyrannina* by slightly longer tail on average, often more olivaceous flanks. Female has crown, upperparts and wings olive-grey, tinged tawny, side of head grey or brownish-grey, supercilium paler, interscapular patch absent or vestigial, wing-coverts edged cinnamon, tail dark grey-brown, throat and under-

parts tawny-buff, flanks tinged olive. **VOICE.** Male loudsong a muted note followed by higher-pitched, more intense series initially flat in pitch, then descending and accelerating as final notes shorten (e.g. 10 notes, 2-3 seconds); female similar in patterns of pitch and pace, but higher-pitched and shorter (e.g. 6 notes, 1-7 seconds), and notes downslurred, usually given in duet after start of male loudsong. Call a rapid sputter of notes.

**Habitat.** Borders and undergrowth of wet montane evergreen forest and tall second-growth woodland, at 1130-1950 m. Found in small (4-5 ha) forest fragments as well as large continuous forest. Most often in young, shrubby patches along borders; also in densely vegetated light-gaps within forest and bamboo (*Chusquea*) thickets.

**Food and Feeding.** Little known. Feeds on variety of insects and spiders; beetles (Coleoptera) most commonly found in stomach contents. Pair-members and family groups forage in undergrowth near ground level, sometimes ascending to mid-levels of adjacent trees; moves actively by hopping through branches, including vertical ones; glean prey from foliage. Typically forages apart from mixed-species flocks.

**Breeding.** Little known. Fledglings found in Apr and Jul in Antioquia.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Status uncertain. This recently described species has a limited geographical distribution and occupies a narrow elevational band, which suggests that total population size is small. This, combined with fact that mid-elevation Andean forests which it occupies are rapidly disappearing as a result of human colonization, logging, and cultivation for agriculture, suggests that it is at some degree of risk. This risk possibly ameliorated somewhat as the species is adapted to second growth and forest edge; such preferences, however, will not protect it from wholesale clear-cutting of forest. Additional surveys are needed in order to provide complete picture of its distributional limits, population densities, and basic ecological requirements.

**Bibliography.** Cuervo (2003), Cuervo & Delgado (2001), Graves (1997), Isler & Whitney (2002), Rodner *et al.* (2000), Salaman Donegan & Cuervo (2002).

## 141. Black Antbird

### *Cercomacra serva*

**French:** Grisin noir **German:** Südlicher Trauerameisenfänger **Spanish:** Hormiguero Negro

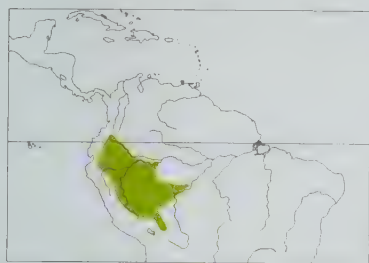
**Taxonomy.** *Pyriglena serva* P. L. Selater, 1858, Rio Napo, Ecuador.

Considered to form a species group with *C. nigrescens*, *C. laeta*, *C. tyrannina* and *C. parkeri* on basis of plumage and vocal characters, and pending completion of major genetic study. Birds from C Peru and W Brazil S to Bolivia described as race *hypomelaena*, but appear to represent S end of a cline of decreasing plumage darkness. Monotypic.

**Distribution.** E of Andes from S Colombia (Putumayo), Ecuador, Peru and SW Amazonian Brazil (E to lower R Juruá and upper R Madeira) S to NW Bolivia (Pando, La Paz).

**Descriptive notes.** 13.5-14.5 cm; 15-17 g. Male is blackish to dark grey (darkest in N); interscapular patch and hidden patch under scapulars white; flight-feathers edged grey, wing-coverts tipped white. Female has crown, upperparts, wings and tail dark grey, tinged olive-grey to olive, interscapular patch white, wing-coverts and flight-feather edges tinged yellowish-brown, underparts reddish-brown to reddish yellow-brown, especially on breast; darkest in N. Subadult male is





like female, moults patchily into adult male plumage. Voice. Male loudsong a series of 4-7 countable (e.g. 4 notes, 1-5 seconds) sharp notes rising in pitch and accelerating slightly; female similar but lower-pitched and often followed by 2-4 soft abrupt notes, usually given in duet at end of male loudsong. Calls include a short to moderately long (e.g. 2 seconds) series of harsh "chak" notes delivered rapidly, and similar notes given in pairs.

**Habitat.** Understorey of humid evergreen-forest borders (*terra firme*, transitional, *várzea*), adjacent tall second growth, and densely vegetated treefalls, light-gaps, lake margins, and

stands of bamboo within forest; lowlands to 1350 m.

**Food and Feeding.** Little published. Feeds on variety of insects, including orthopterans and homopterans (Cicadidae); probably also on spiders. Closely associated partners, individuals, or family groups forage mostly 0-2 m above ground, exceptionally to 7 m; usually alone, seldom with mixed-species flocks. Forages mostly within shaded, dense cover of vine-covered shrubby thickets, treefall tangles and dense bamboo thickets, where difficult to observe; occasionally climbs vines for several metres along larger trunks to forage in clumps of broad-leaved epiphytes. Active but methodical forager, progressing by short hops, separated by pauses of a few seconds to scan for prey; clings laterally to slender vertical stems and vines; posture varies from nearly horizontal to three-quarters upright, with tail usually held level with body or slightly cocked, and often fanned, tail sometimes swung from side to side, wings regularly flicked; movements somewhat erratic, often follows zigzag course with frequent changes of direction. Most prey perch-gleaned from tops and bottoms of live leaves and from stems, vines and branch surfaces, by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; probably also sallies to underside of overhanging vegetation in manner of congeners. Rarely follows swarms of army ants (*Eciton burchelli*) as these pass through treefalls or dense second growth (record from Ecuador).

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon throughout most of its range. Regions occupied by this species include a number of large protected areas, e.g. Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, Serra do Divisor National Park, in Brazil, and Madidi National Park, in Bolivia; also large expanses of intact, suitable habitat that are not formally protected, but seem to be at little risk of being developed in near future. This species' ability to utilize a variety of second-growth habitats renders it less vulnerable to disturbance than are many other antbirds.

**Bibliography.** Alvarez (1994), Alverson *et al.* (2001), Bierregaard *et al.* (1997), Cory & Hellmayr (1924), Fitzpatrick & Willard (1990), Foster *et al.* (1994), Hilty & Brown (1986), Isler & Whitney (2002), Parker & Bailey (1991), Parker & Remsen (1987), Remsen (1986), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Servat (1996), Sick (1993), da Silva (1992), Stotz *et al.* (1996), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Willis (1985a), Zimmer, J.T. (1931a), Zimmer, K.J. (2003a).

## 142. Grey Antbird

### *Cercomacra cinerascens*

**French:** Grisin ardoisé **German:** Aschgrauer Ameisenfänger **Spanish:** Hormiguero Gris  
**Other common names:** Selater's Antbird (*scelateri* and *iterata* combined)

**Taxonomy.** *Formicivora cinerascens* P. L. Selater, 1857, Rio Napo, Ecuador.

Relationships uncertain; thought by some authors to be a sister-species to the "*C. nigricans* species group", or intermediate between the two major *Cercomacra* species groups. Populations fall into two pairs; nominate race and *immaculata* may prove to be a different species from *scelateri* and *iterata*, but differences between races within each pair (especially first of those) may be clinal. Four subspecies recognized.

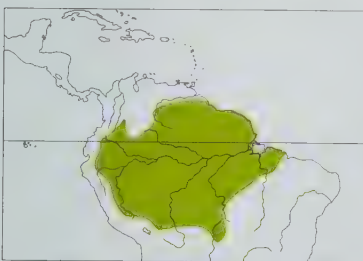
#### Subspecies and Distribution.

*C. c. cinerascens* (P. L. Selater, 1857) - S Venezuela (W & S Bolivar, Amazonas), SE Colombia, E Ecuador, NE Peru (N of R Amazon and R Marañón) and NW Amazonian Brazil (N Amazonas, Roraima, N Pará W of R Nhamunda).

*C. c. immaculata* Chubb, 1918 - E Venezuela (E Bolivar), the Guianas and NE Amazonian Brazil (Amapá, N Pará E of R Nhamunda).

*C. c. scelateri* Hellmayr, 1905 - E Peru (mainly S of R Amazon and R Marañón but also occurs N of latter), SW Amazonian Brazil (S of R Amazon, E to R Madeira) and NW Bolivia (Pando, La Paz, Beni).

*C. c. iterata* J. T. Zimmer, 1932 - SE Amazonian Brazil (E of R Madeira to W Maranhão, S to Rondônia, W Mato Grosso and S Pará) and NE Bolivia (N Santa Cruz).



**Descriptive notes.** 13-14 cm; 14-18 g. Male nominate race is dark grey above, small white interscapular patch; wings tinged brown, coverts occasionally with minute white spots (often absent); tail blackish-grey, large white terminal spots; underparts medium grey. Female has crown and upperparts olive-brown, interscapular patch almost non-existent, rump greyer, wings darker, wing-coverts with pale yellowish-olive tips, tail slaty with markings as male, throat and underparts olive-yellow, dusky on flanks and crissum. Subadult male is similar to female, but interscapular patch larger; becomes patchily ochraceous and grey

below during moult into adult plumage. Race *immaculata* differs from nominate in interscapular patch absent or minimal, female tail spots smaller; *scelateri* has larger white interscapular patch, wing-coverts with larger white spots at tips, larger white tips on rectrices, male also concealed white patch under anterior scapulars, darker underparts; *iterata* resembles previous but both sexes paler, female rump colour same as mantle, tail olivaceous with black subterminal band. Voice. Male loudsong a short "cuk" followed by long harsh note, or notes in reverse order, or both notes raspy, geographical differences not yet analysed; female loudsong appears to be regular repetition of its call, a short sharp "zhip", sometimes given simultaneously with male loudsong but not in clearly synchronized duet. Calls include slow rattle in which individual notes distinct, fast rattle with notes run together; by male also sharp "k-luck" consisting of abrupt note immedi-

ately followed by longer note; by female also sharp "zhip" (as used in song), and low-pitched nasal growl.

**Habitat.** Vine tangles in subcanopy and mid-storey (including canopy of mid-storey trees) of low-land evergreen forest, mostly below 900 m; occasionally higher, to 1150 m, in Andes.

**Food and Feeding.** Little published. Feeds on various insects, including lepidopteran larvae, orthopterans, and spiders. Stomach contents from Brazilian specimen included orthopterans (Acrididae), spiders, and at least five species of beetle (Coleoptera). Closely associated pair-members, individuals, or family groups forage mostly 8-20 m above ground, sometimes higher; usually alone, but sometimes joins mixed-species flocks of other insectivores as these pass through its small territory. Foraging behaviour not well known, largely because this species usually remains concealed in tangles high in subcanopy, where exceedingly difficult to observe. Somewhat sluggish in movements, progressing by short hops, with frequent pauses of several seconds to scan for prey; forages mostly in dense vine tangles along major trunks and in interior portions of canopy and subcanopy, hitching from side to side, fanning tail to display spots; also cocks tail to one side and head to other side in display. Perch-gleans most prey from live or suspended dead leaves and from stem, vine and branch surfaces, by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; sometimes probes curls of dead leaves with the bill, at other times aggressively tears apart leaves to reach prey hidden inside; also removes caterpillars from silk webs or tents, often by grabbing the larva with the bill and then fluttering down to much lower perch to free it from the silk, returning repeatedly to same web to make multiple captures. Recorded as briefly attending swarms of army ants (*Eciton burchelli*) in Amazonian Brazil.

**Breeding.** Little known. A nest under construction in Sept in French Guiana, c. 10 m off ground in thick clump of lianas, from which nest materials taken; nest in Peru was referred to as being composed principally of leaves and sticks. Eggs from Peru (race *scelateri*) pale brown, streaked and blotched with rich brown and grey; from Guyana (*immaculata*) dull reddish-white, covered all over with dark red-brown and dull brown blotches, streaks and scrawlings.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Common throughout its large range. Range essentially covers most of the humid lowland forest in the Amazon Basin and Guianan region; this includes numbers of protected parks and reserves in virtually every country in which the species occurs, as well as vast areas of suitable habitat which, although not formally protected, are in little danger of development in the short term.

**Bibliography.** Alvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Cox *et al.* (1992), Foster *et al.* (1994), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Killen & Schulenberg (1998), Kreuger (1968), Meyer de Schauensee & Phelps (1978), Munn & Terborgh (1979), Novas (1970, 1980), O'Neill (1974), Oniki (1971b, 1972a), Oren & Parker (1997), Parker (2003a), Parker & Bailey (1991), Pearson (1971), Remsen (1986), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Schubart *et al.* (1965), Selater & Salvin (1873), Servat (1996), Sick (1993), Stotz (1990b), Stotz & Bierregaard (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Tallman & Tallman (1994), Terborgh & Weske (1969), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1994), Tostain (2003), Tostain *et al.* (1992), Whitney (2003a), Willis (1977, 1985a), Zimmer, J.T. (1932e), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997).

## 143. Rio de Janeiro Antbird

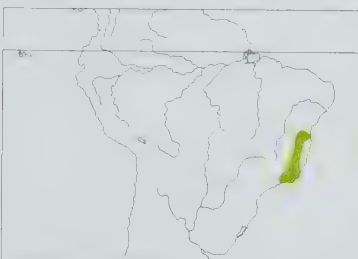
### *Cercomacra brasiliana*

**French:** Grisin du Brésil **Spanish:** Hormiguero Brasileño  
**German:** Rio de Janeiro-Ameisenfänger

**Taxonomy.** *Cercomacra brasiliana* Hellmayr, 1905, Rio de Janeiro, Brazil.

Relationships uncertain; sometimes considered close to *C. cinerascens* on basis of plumage, but vocalizations suggest a relationship with the "*C. nigricans* group". Monotypic.

**Distribution.** SE Brazil (SE Bahia, E Minas Gerais, Rio de Janeiro and Espírito Santo).



**Descriptive notes.** 13-14 cm. Male is dark grey above, somewhat paler below, white interscapular patch, concealed white patch under anterior scapulars; wings tinged brown, coverts fringed with white at tips; tail graduated, blackish-grey, feathers with narrow white tips. Distinguished from very similar *C. cinerascens* of race *scelateri* by more graduated tail, narrower white tips of rectrices, smaller bill. Female is olive-brown above, broad, diffuse whitish area around eye, interscapular patch almost non-existent, rump greyer, wings darker, tail pale olivaceous brown, throat and underparts bright ochraceous tawny; very narrow buff fringes on tips of wing-coverts and rectrices, presumably soon lost with wear. Voice.

Male loudsong 2-4 rapidly delivered, abrupt, barely audible notes followed by longer (e.g. 0-2 seconds) harsh note; female loudsong abrupt (e.g. 0-06 seconds) notes sounding like "cup", repeated a little irregularly at c. 2 per second; male and female deliver loudsongs simultaneously in imperfectly synchronized duet. Calls include a rapidly delivered series of short notes, first note more emphatic, and frequency-modulated versions of loudsong notes.

**Habitat.** Understorey and mid-storey of dense evergreen second-growth thickets and forest edge, to 950 m. Precise habitat requirements not well understood, but appears capable of adapting to various types of humid, shaded second growth, particularly where vine tangles abundant. In foothills near Boa Nova (Bahia), occupies slopes covered by dense stands of bracken-ferns (*Pteridium*) growing to 2 m or more, with emergent vine-covered shrubs and trees. In same area, found also in more mature second-growth forest along streams, where dense thickets of shrubs and understorey trees are overtopped by interlacing mats of herbaceous vines and bamboo, and where trunks of larger, emergent trees are covered with philodendrons (*Philodendron*) and tangles of hanging vines.

**Food and Feeding.** Almost nothing published. Feeds on variety of insects, including lepidopteran larvae and orthopterans; probably also on spiders. Closely associated partners, individuals, or family groups forage mostly 1-6 m above ground; usually alone, but sometimes briefly joins mixed-species flocks of other insectivores as these pass through its territory. Active but methodical forager, progressing by short hops, with frequent pauses of 1-4 seconds to scan for prey; posture varies from nearly horizontal to three-quarters upright, with tail most often held level with body, sometimes cocked at slight angle and then slowly lowered below horizontal before being flicked upwards again; habitually flicks both wings as it forages. Somewhat erratic in movements, follows zigzag course, often making abrupt changes of direction, frequently retracing routes. Forages mostly in shaded, dense vine tangles, shrubby thickets and dense stands of bracken-fern; sometimes fol-



lows hanging vines up larger tree trunks into slightly more open settings. Perch-gleans most prey from tops and bottoms (in roughly equal proportions) of live leaves and dead bracken, vines, stems and branches, by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; frequently makes diagonal to nearly vertical sallies (15–70 cm) to take prey from overhanging vegetation. Often flutter-chases flushed prey with rapid series of wing-assisted hops in which the wings are often fluttered to maintain balance as the bird alternately brakes, accelerates and changes direction within dense tangles; these flutter-chases are directed horizontally and upwards and are a regular part of the species' foraging repertoire, in addition to the more generic sudden downward flutters in pursuit of flushed prey. Also occasionally probes suspended dead leaves, but most dead-leaf foraging is directed at dead fronds of bracken-ferns. Smaller prey immediately swallowed, but larger items bashed repeatedly on branches before consumption; prey capture often accompanied by audible snap of mandibles. Not known to follow army ants.

**Breeding.** Almost nothing known. Territory sometimes apparently no more than 100–150 m in diameter. Eggs light brown, covered almost completely with dark brown spots and flecks, most concentrated in wreath at larger end.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species; present in Atlantic Forest Lowlands EBA. Generally rare to uncommon

over whole of its range, but very patchily distributed; locally more common. Skulking habits and reliance on dense thickets of second growth have probably led to its being overlooked in a number of areas where it occurs. In 1996–1997, total of 14 territories located in Serra do Ouricana foothills near Boa Nova, in Bahia, and in a few places 2–3 pairs heard simultaneously; subsequent to 1998, many of the streamside thickets formerly occupied by this species were cleared for planting of bananas, and bracken-covered hillsides supporting multiple territories were completely cleared for planting of coffee; subsequent surveys in 2001–2002 yielded only 2 pairs in the area that previously supported at least 14. More comprehensive survey work is needed in order to locate any additional populations of this species, and to clarify precise habitat requirements. Example from Boa Nova illustrates that it is capable of existing in second-growth habitats at fairly high densities if level of disturbance is not too significant. Should additional "pockets" of local abundance be discovered, steps should be taken to protect as much of the suitable habitat as possible; once such areas have been identified and protected, some habitat management may be required so as to maintain adequate levels of vegetation in the successional stages preferred by the species.

**Bibliography.** Collar & Andrew (1988), Collar *et al.* (1994), Cory & Hellmayr (1924), Isler & Whitney (2002), Ridgely & Tudor (1994), Schönwetter & Meise (1967), Sick (1993, 1997), Stattersfield & Capper (2000), Stotz *et al.* (1996), Zimmer (2003a).











## 144. Rio Branco Antbird

### *Cercomacra carbonaria*

**French:** Grisin charbonnier

**Spanish:** Hormiguero del Branco

**German:** Rio Branco-Ameisenfänger

**Other common names:** Branco Antbird

**Taxonomy.** *Cercomacra carbonaria* P. L. Slater and Salvin, 1873, Rio Branco, Roraima, Brazil. This and *C. nigricans*, *C. melanaria* and *C. ferdinandi* appear to form a species group on basis of plumage, vocalizations and ecology, with *C. manu* probably sister to the group. Monotypic.

**Distribution.** Extreme N Brazil (middle R Branco and tributaries) and adjacent Guyana (R Ireng).

**Descriptive notes.** 14-15.5 cm; one individual 14.5 g. Male is black, outer scapulars edged white, interscapular patch and hidden patch under scapulars white, wing-coverts edged white at tips, inner margins of flight-feathers white; tail graduated, large white tips. Female has crown, head side and upperparts brownish-grey, interscapular patch white, wings and tail dark grey, flight-feathers edged greenish-grey, wing-coverts blackish-grey, tipped white, tail broadly tipped white; throat and upper breast white, spotted dark grey, lower breast and belly streaked grey and buff-white, sides, flanks and crissum buff-grey. **VOICE.** Male



loudsong a couplet consisting of short buzzy note and longer, clearer note, repeated 4-10 (most often 4-7) times; synchronized duet initiated when female interjects loud buzzy note during male loudsong, at which point male shifts to single buzzy note, lower-pitched than female's, and the two notes are alternated antiphonally for 3-5 seconds. Calls include duo or trio of abrupt notes, delivered rapidly, and unclear whine that sounds like a tree branch squeaking in wind.

**Habitat.** Understorey and mid-storey of dense vine thickets bordering lowland tropical river-edge forest. Along banks of R Branco, was found only in dense thickets at edge of gallery forest, within 100 m of river. On nearby river islands apparently more of a habitat generalist, found in dense, relatively young second growth (mostly in overgrown manioc plantations with scattered tall trees), older *Cecropia*-dominated second growth with dense shrubby understorey, and tall (20-30 m canopy), floristically diverse forest with abundant vine tangles.

**Food and Feeding.** Little known. Feeds on insects, including orthopterans (Tettigoniidae), probably also on spiders. Closely associated partners, individuals, or family groups forage mostly 1-7 m above ground, occasionally to 10 m; seems not to follow mixed-species flocks. Active, progresses by short hops, separated by frequent pauses of 0.5-2 seconds to scan for prey; generally traces zigzag route through foliage, with frequent changes of direction; posture between horizontal and 45 degrees, tail frequently wagged up and down in 20-degree arc above and below plane of body, wings flicked constantly. Forages mostly in dense, vine river-edge thickets and regenerating clearings, in leafy crowns of understorey trees, and in central vine tangles near trunks of emergent trees. Perch-gleans most prey from tops and bottoms of live leaves and from vines, stems and branches, by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; sometimes makes short (less than 30 cm) fluttering sallies or even shorter jump-gleans to underside of overhanging vegetation; also flutters down abruptly in pursuit of flushed prey.

**Breeding.** Little known. In Roraima, nest found in Aug on São Jose I, and female in heavy moult and with reduced gonads in Oct near Boa Vista, where also many males actively moulting rectrices (and little spontaneous song heard) in Nov; observations suggest that local dry season is non-breeding season. For only known nest, female observed constructing small, delicate cup connected by black rootlets to fork 1.5 m above ground in a main branch in outer, more heavily leaved portion of shrub 3 m tall located in second growth 8 m from edge of manioc field and 50 m from riverbank. Diameter of territories N of Boa Vista appeared to be no more than 100-150 m; territory defended by both members of pair.

**Movements.** Presumed resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species; present in Rio Branco Gallery Forest EBA. Locally fairly common. Occupies tiny range, and does not occur in any formally protected sites. Furthermore, gallery forests and river islands where it is found represent only a fraction of the mapped geographical range; total area potentially occupied by the species has been estimated at 250 km<sup>2</sup> or less. Extrapolation from densities recorded N of Boa Vista yields crude estimate of a maximum mainland population of 3700 birds, with perhaps another 500-1000 on river islands. Main threat may be the burning of habitat; c. 75% of São Jose I was burned in 1998, and widespread fires in Roraima in following year may have had severe impact on river-edge habitats; assessment of impact of these fires is needed. Protection of Boa Agua I and São Jose I (where recorded densities highest) along with areas of gallery forest on adjacent mainland would help to conserve a significant population of this globally threatened species.

**Bibliography.** Bierregaard *et al.* (1997), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), Dunning (1993), Fitzpatrick & Willard (1990), Isler & Whitney (2002), Ridgely & Tudor (1994), Sick (1993), da Silva (1992), Stattersfield & Capper (2000), Stotz *et al.* (1996), Whittaker (2003b), Zimmer, Whittaker & Stotz (1997).

## 145. Jet Antbird

### *Cercomacra nigricans*

**French:** Grisin de jais

**Spanish:** Hormiguero Azabache

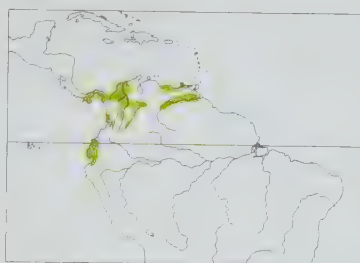
**German:** Nördlicher Trauerameisenfänger

**Taxonomy.** *Cercomacra nigricans* P. L. Slater, 1858, Santa Marta, Magdalena, Colombia.

This and *C. carbonaria*, *C. melanaria* and *C. ferdinandi* appear to form a species group on basis of plumage, vocalizations and ecology, with *C. manu* probably sister to the group. Birds from NW Colombia sometimes separated as race *atrata*, but considered indistinguishable from other populations. Monotypic.

**Distribution.** C & E Panama (from Veraguas on Pacific slope and Colón on Caribbean E to Darién, also Pearl Is), W & N Colombia (Pacific slope in Chocó and Valle, Caribbean slope E to Magdalena, upper Cauca Valley, Magdalena Valley, and base of E Andes S to Meta), W, N & E Venezuela (S

Táchira and W Apure, coastal zone from Aragua E to Delta Amacuro, and along R Orinoco) and W Ecuador.



**Descriptive notes.** 14-15.5 cm; 15-17.5 g (female may weigh less). Male is black, outer scapulars edged white, interscapular patch and hidden patch under scapulars white, wing-coverts edged white at tips, inner margins of flight-feathers white; tail graduated, large white tips. Female is similar to male but blackish-grey, rather than black, whitish eyering, throat narrowly streaked white, sometimes streaks wider and extending down to upper parts of belly, lower belly barred white (differences possibly age-related). Juvenile male is dull brown, tail narrowly tipped white; subadult male is like heavily marked female. **VOICE.** Male loudsong 4

or more pairs of notes, each pair consisting of sharp abrupt note followed by longer buzzy note (e.g. 5 pairs, 2-8 seconds); duet begun when female interjects complex double note into male loudsong, at which point male shifts to single buzzy note, lower-pitched than female's, and the two notes are alternated. Call a harsh note repeated in series at same pace as song or slower, also given singly.

**Habitat.** Understorey and mid-storey of humid, semi-humid and deciduous forest edge and adjacent tall second growth; mainly in lowlands, but to 1400 m in Andes. Found primarily in humid, tangled thickets and dense shrubby borders of both primary forest and tall second growth, particularly where vines abundant, and often near swampy areas. Locally in overgrown plantations adjacent to forest or tall second growth.

**Food and Feeding.** Little published. Feeds on various insects, including lepidopteran larvae, also spiders; stomach contents from Panama included beetles (Coleoptera), bugs (Hemiptera), ants, also unidentified vegetable matter. Closely associated pair-members, individuals, or family groups forage mostly 1-10 m above ground, usually alone, seldom with mixed-species flocks. Forages mostly low within dense vine-covered thickets, or higher within masses of vines along central trunks, where difficult to observe. Active but methodical forager, progressing by short hops, separated by pauses of 1-3 seconds to scan for prey; hitches from side to side up vertical stems and vines and along diagonal limbs; constantly flicks both wings, and tail often wagged slowly down and flicked back up in shallow arc. Perch-gleans most prey from tops and bottoms of live leaves and from stems, vines and branches, by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; may also make fluttering sallies to foliage, as congeners. Rarely attends army-ant swarms, but two pairs observed disputing for position over a swarm of *Eciton* ants in Panama.

**Breeding.** Little known. In Colombia, adult male feeding juvenile on 10th Mar in Choebó (Quibdó) and juvenile seen in Dec in Meta. Single nest in Colombia (Antioquia) described as made of dry grasses, and placed in fork at extremity of bough of low bush, held 2 eggs, pinkish, heavily spotted and lined with reddish-brown and lilac; additional descriptions from Colombia give eggs as pink, mottled and blotched all over with dark purplish-red and lavender, also with dark irregular lines scattered over shell.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout its large range, but patchily distributed. Occurs in a number of protected areas, e.g. Soberania and Darién National Parks and Metropolitan Nature Park, in Panama, Tayrona National Park, in Colombia, Guatopo National Park, in Venezuela, and Juaneche Forest Reserve, in Ecuador. This species' ability to exploit a variety of second-growth habitats renders it less vulnerable to disturbance than are many antbirds.

**Bibliography.** Boggs (1961), Cory & Hellmayr (1924), Darlington (1931), Fitzpatrick & Willard (1990), Hallinan (1924), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Morton (1979), Oates & Reid (1903), Parker & Carr (1992), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Schönwetter & Meise (1967), Slater & Salvin (1879), da Silva (1992), Stotz *et al.* (1996), Wetmore (1972), Willis (1985a), Zimmer (2003a), Zimmer, Whittaker & Stotz (1997).

## 146. Mato Grosso Antbird

### *Cercomacra melanaria*

**French:** Grisin du Mato Grosso

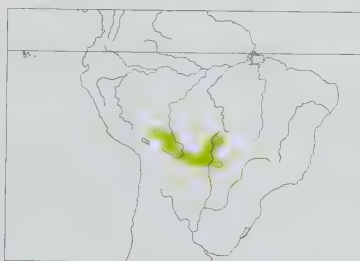
**Spanish:** Hormiguero de Mato Grosso

**German:** Mato Grosso-Ameisenfänger

**Taxonomy.** *Formicivora melanaria* Ménétériés, 1835, Minas Gerais; error = Cuiabá, Mato Grosso, Brazil.

This and *C. carbonaria*, *C. nigricans* and *C. ferdinandi* appear to form a species group on basis of plumage, vocalizations and ecology, with *C. manu* probably sister to the group. Monotypic.

**Distribution.** C & E Bolivia (Beni, Cochabamba, Santa Cruz), extreme N Paraguay (Alto Paraguay) and SC Brazil (S Mato Grosso, W Mato Grosso do Sul).



**Descriptive notes.** 16-16.5 cm; 18.5-19.5 g. Male is black, outer scapulars edged white, interscapular patch and hidden patch under scapulars white, wing-coverts edged white at tips, inner margins of flight-feathers white; tail graduated, large white tips. Differs from *C. nigricans* only in somewhat larger size. Female has head and upperparts olive-grey, interscapular patch white, wings and tail dark grey, wing-coverts tipped white, rectrices tipped white, underparts pale olive-grey, whitest on throat and centre of belly. **VOICE.** Male loudsong 3 buzzy notes, first one abrupt, second long, third intermediate in length, sometimes repeated in short sequences; female nearly identical but higher-pitched; synchronized duet initiated when female interjects loud clearer note during male loudsong, at which point male shifts to similar single clearer note, lower-pitched than female's, the two notes alternated antiphonally for 3-5 seconds. Notes sometimes repeated in doublets, presumably as call.

**Habitat.** Understorey thickets in gallery forest, tropical deciduous forest and seasonally flooded savanna woodland, usually near water, and always with abundance of vines; to 800 m. Particularly



numerous in both gallery forest and swampy woodland hummocks in Pantanal region. Large population was found near Santa Cruz (Bolivia) in a dry forest with numerous floristic elements characteristic of Chaco region; forest was 4-6 m tall, dense, with numerous large columnar cacti (possibly *Cereus dayami*), and abundant cover of terrestrial bromeliads.

**Food and Feeding.** Little published. Feeds on variety of insects and spiders; stomach contents of single Mato Grosso specimen included spiders, orthopterans (Gryllidae), hemipterans (Pentatomidae), and beetles (Chrysomelidae, Galerucinae, Curculionidae). Closely associated partners, individuals, or family groups forage mostly 0-3 m above ground, occasionally to 8 m; mostly alone, but sometimes briefly joining mixed-species flocks of other insectivores as these pass through its territory. Forages mostly in shaded interiors of viny thickets, woody vine tangles in gallery-forest understorey, less frequently at higher levels where masses of vines surround trunks of larger trees; within these microhabitats, forages mostly along open limbs and bare woody vines. Posture varies from nearly horizontal to three-quarters upright, with tail usually in line with plane of body, sometimes slightly cocked, usually held partly fanned and regularly swung from side to side, also slowly wagged downwards c. 30 degrees and then flicked back up to horizontal; frequently flicks both wings as it forages. Active, yet deliberate forager, progresses by short hops and fluttery flights, periodically pausing for 2-5 seconds to scan, at other times making several hops in rapid succession without pausing; somewhat erratic in movements, with frequent changes of direction and retracing of routes. Most prey perched on vine, branch and stem surfaces, by reaching out, up or down with quick stabs of the bill, or by short horizontal lunges; less frequently gleans from live (mostly large) leaves, most often by reaching up to undersides; within thicket interiors, frequently drops to ground to take prey from surface of leaf litter (occasionally probing beneath leaves with the bill), then hops back up to low perches on vines or branches. Not known to follow army ants.

**Breeding.** Little known. Two nests, apparently of this species, found in Dec in Brazil: one made of fine fibres, lined with "horsehair", placed 0.5 m up in fork of branch, 2 eggs being incubated by male; other was in a clearing.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Locally common, particularly in vast areas of Brazilian and Bolivian Pantanal. Only part of Pantanal is formally protected, but nature of seasonal flooding cycles in region provides some natural buffer to human disturbance. A number of proposed hydro-electric schemes, if instituted, could pose significant threat to the general ecosystem of the Brazilian Pantanal.

**Bibliography.** Bierregaard *et al.* (1997), Cintra & Yamashita (1990), Cory & Hellmayr (1924), Fitzpatrick & Willard (1990), Hayes (1995), Hayes *et al.* (1990), Isler & Whitney (2002), López (1985), Rensen *et al.* (1986), Ridgely & Tudor (1994), Schubert *et al.* (1965), Sick (1993), da Silva (1992), Sneath & Schreiner (1929), Storer (1989), Stotz *et al.* (1996), Zimmer (2003a), Zimmer, Whittaker & Stotz (1997).

## 147. Manu Antbird

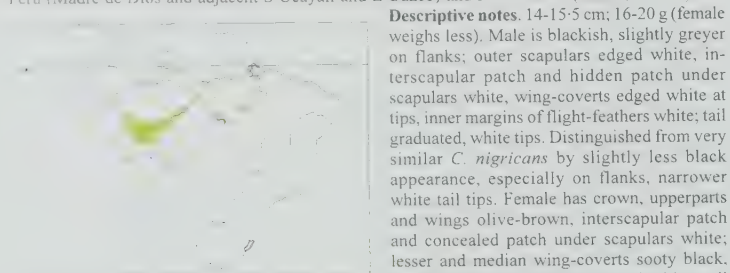
### *Cercomacra manu*

French: Grisin du Manu German: Manuameisenfänger Spanish: Hormiguero del Manu

**Taxonomy.** *Cercomacra manu* Fitzpatrick and Willard, 1990, Shintuya, Madre de Dios, Peru.

Probably a sister-species to the proposed "*C. nigricans* group". Vocalizations possibly vary geographically; analysis of populations needed in order to determine whether taxonomic revision required. Monotypic.

**Distribution.** Locally in S Amazonian Brazil (Acre, SW Amazonas, N Mato Grosso, S Pará, SE Peru (Madre de Dios and adjacent S Ucayali and E Cuzco) and NW Bolivia (Pando, La Paz).



dark greyish-brown, narrowly tipped white; head side, throat and underparts grey, throat faintly streaked white, flanks tinged olive. **VOICE.** Male loudsong a short buzzy note alternated with longer downslurred note, monotonously at relatively slow pace (e.g. 1 note every 0.4 seconds); synchronized duet in which a lower-pitched croaking note by male followed by higher-pitched doublet (sometimes single shorter buzzy note) by female, typically initiated by either sex interjecting its note into male loudsong, repeated variable number of times. Calls include harsh downslurred note, and staccato series of c. 7 abrupt notes dropping in pitch.

**Habitat.** Mid-storey of extensive stands of *Guadua* bamboo in evergreen lowland and foothill forests, locally in riverine forest with thin patches of bamboo; to 1200 m in Peru. Primarily in nearly pure bamboo stands, often near edges of rivers, in lowlands and bluff tops in foothills, as well as along roads and in other areas extensively cleared and with subsequent regenerated bamboo. In Alta Floresta region of Mato Grosso (Brazil), mostly in essentially pure stands of bamboo with fairly open canopy and sunlit interior, and generally absent from smaller shaded thickets inside tall forest in which bamboo thoroughly intermixed with other vegetation (these being occupied by *Drymophila devillei*). In one study area in SE Peru, all territories were located in upland bamboo; at Cocha Cashu, however, as well as in Brazil (SE Pará), observed also in swamp-forest and viny river-edge forest with only thin, scattered bamboo patches.

**Food and Feeding.** Feeds on insects, including lepidopteran larvae and orthopterans; probably also on spiders. Closely associated partners, individuals, or family groups forage mostly 4-15 m above ground, less frequently down to 2 m; alone, or sometimes briefly joining mixed-species flocks of other insectivores as these pass through its small territory. Forages primarily in arching crowns of bamboo, where interspersed vine tangles combine with bamboo branches and foliage to form canopied mats of vegetation; also in vine tangles and shaded canopies of adjacent overstorey trees; in morning hours more in sunlit crowns, descending to lower heights in middle of day. Active, moves along branches in rapid series of short hops, separated by pauses of 1-3 seconds to scan for prey, before taking several more hops in rapid succession; often hitches from side to side as it moves; posture varies from nearly horizontal to three-quarters upright, wings constantly flicked, tail regularly swung from side to side. Perch-gleans most prey from live bamboo foliage and stems, and from interleafed foliage of vine tangles, by reaching up, out or down with quick stabs of the bill; also frequently hover-gleans and makes short (less than 40 cm) fluttering sallies to underside of over-

hanging vegetation, sometimes momentarily hanging upside-down from foliage before dropping back down; sometimes probes in suspended dead leaves trapped in crowns of bamboo.

**Breeding.** Little known. Nest found in Sept in Peru (Madre de Dios), and male carrying food to possible nest or young in Dec in Brazil (Acre). Single known nest described as a pensive pouch with estimated outer diameter 10 cm, outside depth c. 15 cm, composed of dead bamboo leaves laced with long dry fibres (possibly stripped from dry outer clasping sheaths of bamboo), no green vegetation, rim woven on to slender branchlets near point where they forked, suspended from near rim at 3-5 m among dense foliage in a *Guadua weberbaueri* thicket; male observed building nest, and also incubating. Territory small, estimated at 0.5-1 ha in Bolivia, 0.2-0.5 ha at Alta Floresta (Brazil).

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Appears to be fairly common throughout its range, although patchily distributed. In one study area in SE Peru, density recorded in upland bamboo was 25 territories/100 ha; in Brazil, 5 territorial pairs along 100 m of road cut through large bamboo stand at Alta Floresta (Mato Grosso). Regions in which species occurs contain some large protected areas, e.g. Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, Madidi National Park, in Bolivia, and Serra do Divisor National Park and Cristalino State Park, in Brazil. Disjunct Brazil population in Mato Grosso and Pará merits detailed vocal and biochemical analysis; in view of both its apparent isolation and the rampant clearance of forest in parts of that region, it should also be monitored for population declines. In Alta Floresta region, stands of bamboo that harboured high densities of the species as recently as 1995 have since been clear-cut for conversion to cattle pastures. More surveys needed in SE Amazonia in order to determine extent and distributional limits of populations E of R Madeira.

**Bibliography.** Aleixo (2003), Bierregaard *et al.* (1997), Fitzpatrick & Willard (1990), Foster *et al.* (1994), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Kratter (1997a, 1998), Parker (2003a), Parker & Bailey (1991), Parker & Rensen (1987), Parker *et al.* (1997), Ridgely & Tudor (1994), Rosenberg (2003), Servat (1996), da Silva (1992), Stotz *et al.* (1996), Terborgh *et al.* (1984), Whitney (1997, 2003a), Whittaker & Oren (1999), Zimmer (2003a), Zimmer, Parker *et al.* (1997), Zimmer, Whittaker & Stotz (1997).

## 148. Bananal Antbird

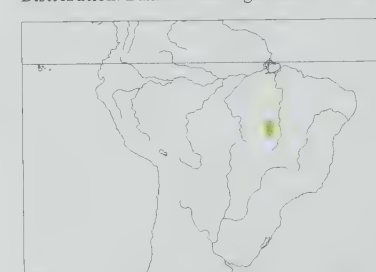
### *Cercomacra ferdinandi*

French: Grisin de Bananal German: Bananalameisenfänger Spanish: Hormiguero de Bananal

**Taxonomy.** *Cercomacra ferdinandi* Sneath, 1928, Furo de Pedra, Ilha do Bananal, Goiás [= Tocantins], Brazil.

Appears to form a species group with *C. melanaria*, *C. carbonaria* and *C. nigricans* on basis of plumage, vocalizations and ecology, with *C. manu* probably sister to the group. Monotypic.

**Distribution.** Bananal I and right bank of R Javaés, in Tocantins, C Brazil.



**Descriptive notes.** 16 cm; 1 individual 15 g. Male is black, outer scapulars edged white, interscapular patch and hidden patch under scapulars white, wing-coverts edged white at tips, inner margins of flight-feathers white; tail graduated, large white tips. Female is similar to male, but black replaced by grey, throat and breast finely streaked white. **VOICE.** Male loudsong harsh, unmusical, staccato, 2 notes given so rapidly as may sound like a single note, followed by 2-10 abrupt single notes delivered rapidly (e.g. 8 notes, 0.7 seconds), entire set repeated in short sequences; synchronized duet initiated when female gives

slightly higher-pitched doublet at conclusion of male loudsong, at which point male shifts to giving only his doublet, the two doublets then alternated antiphonally.

**Habitat.** Mid-storey vine tangles and associated undergrowth of lowland riverine (gallery) forest and adjacent tall second growth; also recorded along edges of oxbow lake. Apparently absent from at least some of the small streams emptying into the river.

**Food and Feeding.** Almost nothing published. Feeds on variety of insects, including orthopterans (Tettigoniidae, Acrididae) and lepidopteran larvae; probably also on spiders. Closely associated partners, individuals, or family groups forage mostly in vine tangles and other dense vegetation 3-15 m above ground; also regularly descends to ground, especially in extended fluttering pursuit of flushed prey (particularly large orthopterans). Usually apart from mixed-species flocks.

**Breeding.** Almost nothing known. Juvenile closely following and being fed by parents in late Aug.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Status poorly known; apparently fairly common within its highly restricted range. Much of area occupied by this species falls within Araguaia National Park (5623km<sup>2</sup>). Very little is known of this thamnophilid, and basic research on its natural history, along with surveys to assess population levels, are urgently needed.

**Bibliography.** Aleixo (2003), Bierregaard *et al.* (1997), Fitzpatrick & Willard (1990), Isler & Whitney (2002), Parker (2003a), Ridgely & Tudor (1994), Sick (1993), da Silva (1992), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Zimmer (2003a), Zimmer, Whittaker & Stotz (1997).

## Genus *PYRIGLENA* Cabanis, 1847

## 149. White-backed Fire-eye

### *Pyriglena leuconota*

French: Alapi à dos blanc German: Schwarzes Feuerauge Spanish: Ojodefuego Dorsiblanco

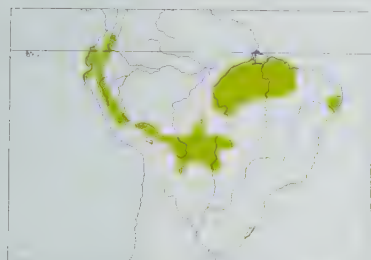
**Taxonomy.** *Myiothera leuconota* Spix, 1824, Pará, Brazil.

Forms a superspecies with *P. atra* and *P. leucoptera*, and sometimes treated as conspecific. Populations of present species appear to involve more than one species; conversely, some races may represent merely clinal variation in plumage; taxonomic study required. Ten subspecies currently recognized.



**Subspecies and Distribution.**

- P. l. pacifica* Chapman, 1923 - W Ecuador and extreme NW Peru (Tumbes).  
*P. l. castanoptera* Chubb, 1916 - Andean slopes in S Colombia (E slope of C range, W slope of E range in Huila, E slope of E range S from Cauca and Caquetá), Ecuador (E slope) and N Peru (N of R Marañón in Piura, Cajamarca and N Amazonas).  
*P. l. picea* Cabanis, 1847 - E Andean slope of C Peru (S Amazonas S to Junin and Ayacucho).  
*P. l. marcapatensis* Stolzmann & Domaniewski, 1918 - SE Peru (Madre de Dios, Cuzco, Puno).  
*P. l. hellmayri* Stolzmann & Domaniewski, 1918 - WC Bolivia (Beni, La Paz, Cochabamba, W Santa Cruz).  
*P. l. maura* (Ménétrières, 1835) - E Bolivia (E Santa Cruz), SC Brazil (W & SW Mato Grosso) and extreme N Paraguay (Alto Paraguay).  
*P. l. similis* J. T. Zimmer, 1931 - SC Amazonian Brazil in Pará and N Mato Grosso (R Tapajós E to R Xingu).  
*P. l. interposita* Pinto, 1947 - E Pará from R Xingu E to R Tocantins.  
*P. l. leuconota* (Spix, 1824) - E Pará (E of R Tocantins) and N Maranhão.  
*P. l. pernambucensis* J. T. Zimmer, 1931 - NE Brazil (E Pernambuco, E Alagoas).



**Descriptive notes.** 16-18 cm; 26-36 g (appears to vary by sex and among races). Interscapular patch white; iris bright red. Male nominate race is glossy black; underwing-coverts blackish-grey. Female has crown, upperparts and wings dark reddish-brown, tail brownish-black; side of head dark brownish grey, throat and anterior underparts buff, breast tinged brownish, sides, flanks and lower underparts dark yellowish-brown, underwing-coverts brownish-grey. Young juvenile (fledgling) resembles respective adult but has short tail (10-20 mm); subadult male quickly acquires body feathers coloured like adult male, first definitive plumage.

age differing only in wings and lower back being reddish yellow-brown. Races vary mainly in plumage of female, as follows: *interposita* is similar to nominate but darker; *pernambucensis* is darker, less brightly coloured, with tail longer; *pacifica* has upperparts dark reddish yellow-brown, underparts greyish olive-brown; *castanoptera* is black like male, except for dark chestnut-brown mantle and wings; *picea* has brown-tinged black head, otherwise dark reddish yellow-brown, paler below; *similis* resembles previous, except rufous-brown; *marcapatensis* has crown and upperparts dark yellowish-brown to deep chestnut-brown, white supercilium, black line through eye, white subocular area, whitish chin; *maura* resembles previous but somewhat paler, upperparts light rufescent brown, white facial marks clearer, chin light buff; *hellmayri* is like last but more olivaceous above. **VOICE.** Male loudsong a medium-length (e.g. 2 seconds) series of evenly paced short whistles that usually rise and fall slightly in pitch, sometimes also in intensity; female similar but often slightly higher-pitched and longer, typically started before male ends; songs appear to vary somewhat among races in pace, frequency pattern, and note length. Calls include short "chip" notes, sometimes in bursts, also longer and often downslurred whistles, and light tinkling trill-like rattle; calls possibly vary more significantly geographically than do loudsongs, but study required.

**Habitat.** Understorey of lowland and foothill evergreen forest, to 950 m in much of range; to 1350 m on Pacific slope; 900-2150 m, rarely higher or lower, on E slope of Andes from Colombia to C Peru; 300-2200 m in SE Peru and W & C Bolivia. May also frequent understorey of gallery forest or deciduous forest in some regions, this particularly true of races *pacifica* and *maura*. Avoids relatively open understorey of mature forest, instead frequenting dense tangles and thickets typical of mature second growth, forest edge, and light-gaps within primary forest (especially treefall edges).

**Food and Feeding.** Feeds on variety of insects, particularly orthopterans; also arachnids, and centipedes (Chilopoda); small lizards up to 11 cm in length regularly taken; also possibly slugs. Recorded prey items in Brazil include beetles (Coleoptera), ants (Formicidae), orthopterans including katydids (Tettigoniidae), grasshoppers (Acrididae), crickets (Gryllidae) and mole-crickets (Gryllotalpidae), cockroaches (Blattodea), mantises (Mantidae), adult and larval lepidopterans, wasps (Hymenoptera), hemipterans, termites (Isoptera), spiders (Araneae), scorpions (Scorpiones), centipedes, and lizards. Lizards up to 11 cm in length were commonest identified prey brought to older nestlings in a study near Belém, in Pará (Brazil). Closely associated partners, individuals, and family groups forage mostly 0-3 m above ground, sometimes to 5 m, in dense tangles of vegetation and woody lianas in understorey, particularly in and around treefalls. Routinely follows swarms of army ants (primarily *Eciton burchelli*, less commonly *E. rapax* and *Labidus praedator*) when these present; multiple pairs or family groups may congregate at swarms, particularly in second growth, gallery forest or other areas lacking such dominant ant-followers as *Rhegmatorhina*, *Phlegopsis* and *Gymnopathys*, and in such circumstances present species may be the dominant antbird, occupying choice foraging locations near swarm centre, and with up to 20 individuals present at one time; territoriality exhibited through dominance hierarchies, in which the individual or pair on its own territory is dominant over other conspecifics; where aforementioned genera are present, it behaves as a subordinate species, being displaced either to higher perches or to periphery of swarm. Normal posture is c. 20 degrees above horizontal, with tail usually held in line with plane of body; regularly pounds tail downwards emphatically, then slowly raises it, sometimes slightly above horizontal, before pounding it down again. Clings laterally to slender vertical stems, with lower leg extended and upper leg flexed, in manner of other ant-following thamnophilids, but spends relatively little time on such perches; instead, is in almost constant motion, hopping or bounding along fallen branches and lianas and through treefall tangles and on ground; when travelling between vertical saplings, sometimes hops to the ground rather than flying directly; hopping (particularly on ground) is considered this species' main foraging adaptation when feeding at antswarms. Horizontal and diagonal perches, which are abundant in treefall and second-growth tangles favoured by this species, are used most often; vertical perches used in more open understorey, mainly when woodcreepers (Dendrocolaptidae) and dominant ant-following thamnophilids are not there to monopolize them. Most common attack manoeuvre a quick pounce from low perch to ground to seize prey fleeing the ants, followed by quick jump back up to another low perch; sometimes remains on ground for several seconds, tossing leaves with its bill to uncover prey hiding in litter; prey taken above ground, from stems, vines, branches or leaves, usually gleaned by reaching up or by short jump-gleans; only occasionally sallies to foliage or branches, maximum distances recorded 2 m for horizontal sallies and up to 4 m for vertical sallies; occasionally sallies to take moths or flying termites from the air. Small prey swallowed immediately, with little or no handling; items such as very large scorpions, centipedes, tarantulas, grasshoppers and katydids usually taken to peripheral spot on ground, where pecked to death and torn apart. Away from ant swarms, hops rapidly through tangles of horizontal branches, perch-gleaning most prey directly from green and dead leaves and from stem, vine and branch surfaces by reaching up, out or down with

quick stabs of the bill, or by short jump-gleans; also commonly drops to ground to take prey from leaf litter.

**Breeding.** Nests in all months in Brazil, with peak in Aug-Nov, minimal nesting activity for 3 months early in dry season (almost no eggs laid from mid-May to mid-Aug). Male may do much of nest-building, particularly in early stages, with female assisting during latter stages of construction: nest a leafy, bulky oven; one from Pará (Brazil) weighed 80.5 g, composed mainly of large dried leaves, palm leaves and twigs up to 30 cm long and 0.5 cm in diameter, some club mosses (*Selaginella*), grass roots and branches mixed in, identified fragments including a spray of *Nepsera aquatica* (Melastomataceae), one of *Gradua latifolia* (Gramineae), one of Cyperaceae, twigs of *Pourouma minor* (Moraceae) and Passifloraceae, and leaves of "caripé", *Cowepia*, *Licania* (Chrysobalanaceae), rubber trees (*Hevea*) and *Cecropia*; nest placed in leaf litter on ground, frequently among *Selaginella stellata* (making it inconspicuous), often in second growth. Normal clutch 2 eggs, occasionally 1, whitish-pink, with scattered reddish-brown spots densest at larger end. Information on incubation, brooding, and feeding of young from study of 5 nests near Belém (Pará); incubation by both parents during day, male 41-6% of time (usually early morning and late afternoon), female 48-5% (middle of day), only female at night, average stint 148 minutes for male, 205 minutes for female; incubation period more than 12 days at one nest; female also brooded chicks more than did male; feeding of nestlings shared by both parents, rates low early in mornings but varied daily; at two nests studied intensively, average interval between feeds at nest with 2 chicks was 24 minutes (range 0-202 minutes, 119 feeds), at the other with single chick 53 minutes (range 2-224 minutes, 39 feeds); at one nest, parents did not feed lizards until nestlings more than 4 days old; young leave nest 10-11 days after hatching; each adult cares for one fledgling (particular one probably accidental, dependent on which parent delivering food at moment chick leaves nest), ignores the one attached to its mate; if only one young survives, it usually stays with one parent (most often the female); by the time young 75 days old, parents court and investigate new nest-sites, and in some cases were already incubating when young from previous nest were 80 days old; nesting continues for much of year, at intervals of c. 50 days between successful nests, and in two cases interval between loss of nest and incubation in new one was c. 10 days. In another study in Pará, only one young survived in 11 of 14 broods watched from soon after fledgling; closed, humid nest and ground location appear to favour parasites, as sitting adults spent long periods pecking under the breast or in nest lining, and chicks parasitized by mites and fly larvae; unattended nestlings attacked by mosquitoes; one documented record of a nestling eaten by a *Pseustes* snake. Male seldom gains mate before his second year (immatures low in dominance hierarchy), although one male paired in first year; time of first breeding for female not established, thought to be c. 1 year.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Generally fairly common throughout its large range. Numerous large protected areas exist within regions occupied by this species; furthermore, it is more capable than many forest birds of persisting in older second growth. Possibly not all races are equally secure, this being particularly applicable to *pacifica*, *maura* and *pernambucensis*. Further investigation may reveal that one or more taxa currently included under this species are worthy of recognition as distinct species, which could introduce caveats to the overall conservation picture.

**Bibliography.** Alverson *et al.* (2001), Capper, Clay, Madroño & Mazar Barnett (2001), Cory & Hellmayr (1924), Cox *et al.* (1992), Davis (1993), Estevão (1926), Fjeldså & Majer (1996), Flores *et al.* (2001), Hayes (1995), Hayes *et al.* (1990), Hilty & Brown (1986), Isler & Whitney (2002), Killen & Schulenberg (1998), Novaes (1969, 1970), Novaes & Lima (1992), Oniki (1972a, 1979a, 1979b, 1979c), Oniki & Willis (1972, 1983b), Parker (1989), Parker & Bailey (1991), Parker & Carr (1992), Parker *et al.* (1995), Peixoto Velho (1932), Perry *et al.* (1997), Pinto (1953), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schönwetter & Meise (1967, 1988), Schubart *et al.* (1965), Schulenberg & Awbrey (1977a), Sick (1993), da Silva & Oniki (1988), Sneath (1935), Stolz *et al.* (1996), Wilkinson & Smith (1997), Willis (1979c, 1981), Willis & Oniki (1978, 1982), Zimmer, J.T. (1931b), Zimmer, K.J. (2003a).

## 150. Fringe-backed Fire-eye

### *Pyriglena atra*

**French:** Alapi noir **German:** Fleckenmantel-Feuerauge **Spanish:** Ojodefuego de Bahía  
**Other common names:** Swainson's Fire-eye

**Taxonomy.** *Drymophila atra* Swainson, 1825, Pitanga, Bahia, Brazil.

Forms a superspecies with *P. leuconota* and *P. leucoptera*, and sometimes treated as conspecific with either or both. Some specimens from Bahia said to have wingbars that suggest hybridization with latter, but forest fragmentation within region makes current or future contact between the two highly unlikely. Monotypic.

**Distribution.** E Brazil in S Sergipe and coastal NE Bahia (near Santo Amaro).



**Descriptive notes.** 16-18 cm; one individual 32 g. Male is glossy black; interscapular patch of feathers with white base and edges, black subapical band; underwing-coverts blackish-grey; iris bright red. Distinguished from extremely similar *P. leuconota* by pattern of interscapular feathers. Female is yellowish-brown above, no interscapular patch, tail brownish-black; lores and line above and behind eye black, side of head grey, tinged olive, chin and throat white, breast light yellowish olive-brown, belly centre whiter, flanks, crissum and underwing-coverts dark grey-tinged olive-brown. Immature has orange eyes.

**VOICE.** Male loudsong an evenly paced, medium-length series (e.g. 8 notes, 2 seconds), notes longer than intervals, at same pitch or dropping slightly, first note often shorter or less intense; female loudsong like male's but drops more in pitch. Common calls include long squeaky note, abrupt sputter, and musical rattle falling in pitch.

**Habitat.** Understorey of lowland evergreen-forest edge, densely vegetated light-gaps and treefalls within primary forest, and adjacent tall second growth. Occupies areas of tangled second growth with numerous horizontal perches near ground, particularly around treefalls, avoiding relatively open understorey of interior of primary forest. Capable of persisting in degraded forest and tall second growth, but avoids sunlight and open second growth where much of undergrowth has been cut out.

**Food and Feeding.** Feeds on insects, including cockroaches (Blattodea), grasshoppers (Acrididae) and winged ants (Formicidae); also on spiders and centipedes (Chilopoda). Closely associated partners, individuals, or family groups forage mostly 0-3 m above ground, occasionally to 10 m, mostly in dense tangles of vegetation with abundant horizontal and inclined perches near ground, particularly around treefalls and regenerating light-gaps, as well as in brushy thickets at forest



edge; less frequently in vine tangles suspended from larger trees. Routinely follows swarms of army ants (particularly *Eciton burchelli*) in pursuit of flushed arthropods; in absence of sympatric species of "professional" ant-following thamnophilids, is often the behaviourally and numerically dominant bird attending such swarms, with concentrations of up to 18 individuals reported at single swarm; does not follow ants into sunny clearings, but will follow them across logging roads and through both dense and open vegetation for several hours. Normal posture c. 20 degrees above horizontal, tail usually held in line with plane of body; regularly pounds tail downwards emphatically in c. 30-degree arc, then slowly raises it, sometimes slightly above horizontal, before pounding it down again. Clings laterally to slender vertical stems, with lower leg extended and upper leg flexed, but spends relatively little time on such perches; instead, takes mostly horizontal or inclined perches 1-2 cm in diameter near ground. Most common attack manoeuvre a quick pounce from low perch to ground to seize prey fleeing the ants, followed by quick jump back up to another low perch; sometimes remains on ground for several seconds, tossing leaves with its bill to uncover prey hiding in litter; prey taken above ground, from stems, vines, branches or leaves, usually gleaned by reaching up, out or down, or by short jump-gleans, only occasionally by sallies to foliage or branches. Like congeners (and unlike most obligate ant-followers), tends to hop from perch to perch frequently and to spend more time hopping on ground; when swarms attended by numerous fire-eyes and competition for preferred sites intense, subordinate individuals (mostly younger birds) are displaced horizontally to periphery of swarm, or vertically to higher perches above ants, hitching up along woody vines to heights of 8-10 m before fluttering back down. Adults seen to feed seemingly independent juveniles at swarms. Away from ants, hops rapidly through tangles of horizontal branches, perch-gleaning most prey directly from leaf, stem, vine and branch surfaces by reaching up, out or down with quick stabs of the bill, or by short jump-gleans; also commonly drops to ground to take prey from leaf litter. Sometimes briefly joins mixed-species groups of other insectivores, often including Moustached Wren (*Thryothorus genibarbis*).

**Breeding.** Little known. In Bahia (Santo Amaro), specimen with developed gonads in Oct and several nearly independent fledglings in late Nov; in Sergipe, adults paired but relatively non-vocal and multiple independent immatures observed at ant swarms in Jan, indicating that breeding season there already over. Eggs said to resemble those of *P. leuconota* and *Taraba major*. Several records in Bahia of only one parent (either sex) feeding a juvenile or leading it away from observer.

**Movements.** Resident.

**Status and Conservation.** CRITICAL. Restricted-range species: present in Atlantic Forest Lowlands EBA. Minute range of perhaps no more than 9 km<sup>2</sup>, within which virtually all forest being rapidly cleared for agriculture, particularly for plantations of oil palms (*Elaeis guineensis*) and sugar-cane production. Capable of persisting for periods in degraded second-growth woodlots, but even these are being rapidly cleared. Species could not be located in 1996 at several sites near Santo Amaro where known to be present in 1980s. In Sergipe, population recently discovered in a humid forest fragment near Crasto, where at least 6 pairs in 1994, and estimated 18 individuals attending large army-ant swarm in Jan 2002; this discovery extended the species' known range N by c. 175 km, and suggests that remaining forests S to vicinity of Salvador and Santo Amaro may also hold populations. Immediate protection of the Crasto site should be considered a conservation priority. Surveys of all forest fragments between Crasto and Salvador are also urgently needed in order better to assess general population levels and to detect any additional strongholds that should be preserved.

**Bibliography.** Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), Isler & Whitney (2002), King, W.B. (1978/79), Meyer de Schauensee (1966), Pacheco & Whitney (1995), Pinto (1938, 1978), Ridgely & Tudor (1994), Sick (1969a, 1993, 1997), Sick & Teixeira (1979), Stattersfield & Capper (2000), Teixeira *et al.* (1989), Willis & Oniki (1978, 1982), Zimmer, J.T. (1931b), Zimmer, K.J. (2003a).

## 151. White-shouldered Fire-eye

### *Pyriglena leucoptera*

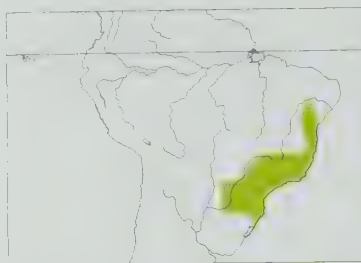
French: Alapi demoiselle German: Weißschulter-Feuerauge Spanish: Ojodefuego Aliblanco

**Taxonomy.** *Turdus leucopterus* Vieillot, 1818, near Rio de Janeiro, Brazil.

Forms = superspecies with *P. leuconota* and *P. atra*, and sometimes treated as conspecific with either or both. Monotypic.

**Distribution.** E Brazil (E Bahia and SW Minas Gerais S to S Mato Grosso do Sul and extreme N Rio Grande do Sul), E Paraguay (Canendiyu S to Itapúa) and extreme NE Argentina (Misiones).

**Descriptive notes.** 16-18 cm; 25-34 g (female appears to weigh less). Male is glossy black; interscapular patch white, lesser wing-coverts white, median and greater coverts tipped white; underwing-coverts blackish-grey; iris bright red. Female has crown, upperparts and wings yellowish-brown, no interscapular patch, tail brownish-black, lores black, side of head grey, tinged olive, chin and centre of throat white, breast light yellowish olive-brown, central belly whiter, flanks,



crissum and underwing-coverts dark olive-brown with greyish tinge. **VOICE.** Male loudsong a regular, medium-length series (e.g. 8 notes, 2 seconds), notes longer than intervals, evenly pitched or dropping slightly, first note often shorter or less intense; female similar but pitch descending more. Calls include low-pitched "chup", higher and longer "cheep", and musical bubbling rattle typically diminishing in pitch and intensity.

**Habitat.** Understorey of evergreen-forest edge, forest light-gaps and mature second-growth woodland, also selectively logged forest and plantations; from lowlands to 1250 m, occa-

sionally higher. Often in areas with extensive bamboo, but not confined to this. Frequents dense vine tangles and thickets at forest edge and in light-gaps within forest, such as borders of treefalls and landslides, or large stands of bamboo; as congeners, avoids open areas of forest interior.

**Food and Feeding.** Feeds on variety of insects, including orthopterans (Gryllidae, Tettigoniidae, Acrididae), cockroaches (Blattoidea), beetles (Bostrichidae, Curculionidae), and ants (Formicidae); also spiders, and reported to take geckos. Closely associated pair-members, individuals, or family groups forage mostly 0-3 m above ground, but occasionally to 10 m; alone, or sometimes briefly joining mixed-species flocks of other insectivores. Forages mostly near ground in shaded, tangled thickets of vines, second growth and bamboo with abundant horizontal and inclined perches, but regularly climbs through hanging vine tangles to forage much higher. Regularly follows army-ant swarms in order to capture fleeing arthropod prey; multiple pairs or family groups may congregate at swarms, where behaviour similar to that of congeners; posture c. 20 degrees above horizontal, tail usually held level with body and regularly pounded downwards in c. 30-degree arc, then slowly raised, before being pounded down again; clings laterally to slender vertical stems, lower leg extended and upper one flexed, but more often on horizontal or inclined perches near ground; commonest attack manoeuvre a quick pounce from low perch to ground to seize fleeing prey, then quick jump back up to another low perch, sometimes stays on ground for several seconds and tosses leaves to uncover concealed prey in litter; prey taken from above-ground stems, vines, branches or leaves usually gleaned, by reaching up, out or down, or by short jump-gleans, more rarely by sallies to foliage or branches. Encountered more frequently away from ants than are its congeners, probably reflecting generally lower density of army-ant swarms in habitats in which it is found; away from ants, perch-gleans most prey from leaf, vine and branch surfaces, by reaching up, out or down with quick stabs of the bill or by short horizontal lunges, also sometimes makes short fluttering sallies and shorter jump-gleans to live foliage; commonly drops to ground to take prey from leaf litter.

**Breeding.** Season Sept-Dec. Carefully documented nest found in Misiones (Argentina) was a sphere of leaves, petioles and rolled sheaths of bamboo, diameter 26 cm, entrance hole 7-8 cm across and 30 degrees from vertical, cavity depth 12.5 cm, placed on ground on top of old nest of leaves in dense bamboo (*Merostachys clausenii*) under 70% tree cover; nests in Brazil were similar but constructed from other plant materials present in vicinity, including at one location stems and leaves of an arrowroot (Marantaceae), and resting on base of low tree, or on tree stump, or between bracken-ferns (*Pteridium*); apparent tendency or requirement that nest be raised slightly off top of soil. Normal clutch 2 eggs, white or creamy white, marked all over (often more densely at broad end) with reddish blotches and with fine spots and twisted lines of deep brownish-purple, red-brown, lilac-red and dark lilac-grey; incubation by both parents during day, probably only by female at night.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of its range. Range encompasses numerous protected areas, e.g. Itatiaia, Iguazu, Tijuca, Serra dos Órgãos and Serra da Bocaina National Parks, Sooretama and Augusto Ruschi Biological Reserves and Serra do Mar State Park, in Brazil, and Iguazú National Park, in Argentina. May be incapable of persisting in forest fragments of less than 300 ha, and some populations may be endangered at local level as a result of rapid clearance of forest for agriculture. On other hand, survives well in selectively logged forest, and appears to colonize eucalyptus (*Eucalyptus*) plantations readily, especially if these contain an understorey of native plants.

**Bibliography.** Aleixo (1999), dos Anjos (2001a), dos Anjos & Boçon (1999), Bencke & Kindel (1999), Berla (1944), Cândido (2000), Christiansen & Pitter (1989), Cory & Hellmayr (1924), Davis (1945, 1946), Euler (1900), Ferreira de Vasconcelos & Melo-Júnior (2001), Fraga & Narosky (1985), Isler & Whitney (2002), Kreuger (1968), Lopes *et al.* (1980), Machado, C.G. (1999), Machado, R.B. & Lamas (1996), Magalhães (1999), Moojen *et al.* (1941), Motta-Júnior (1990), Motta-Júnior & Vasconcello (1996), Nehrkorn (1899), Oates & Reid (1903), Oniki (1981), de la Peña (1988), Pinto (1944), Protomastro (2002), Ridgely & Tudor (1994), do Rosário (1996), Schönwetter & Meise (1967), Schubart *et al.* (1965), Scott & Brooke (1985), Sick (1993, 1997), Snethlage & Schreiner (1929), Storer (1989), Stotz *et al.* (1996), Wilkinson & Smith (1997), Willis (1979c), Willis & Oniki (1982), Zimmer, J.T. (1931b), Zimmer, K.J. (2003a, 2003b).







PLATE 61

inches 3  
cm 8



152



ssp  
*leucophrys*



ssp *angustirostris*



ssp *lugubris*



153



ssp *berlepschi*



ssp *myotherinus*



ssp *stictopterus*

154



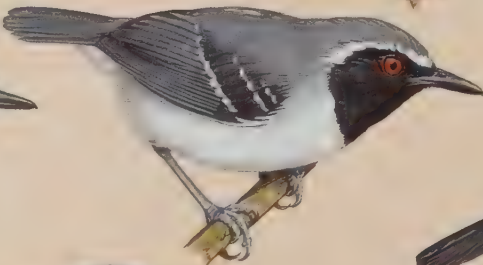
ssp *elegans*



155



ssp *ochrolaema*



156



ssp *ardesiatus*





# Genus *RHOPORNIS* Richmond, 1902

## 152. Slender Antbird

### *Rhopornis ardesiacus*

**French:** Alapi du Bahia **German:** Graues Feuerauge **Spanish:** Horniguero Esbelto

**Taxonomy.** *Myiothera ardesiaca* Wied, 1831, Boa Nova, Bahia, Brazil.  
Close relationship to *Pyriglena* indicated by voice and behaviour. Monotypic.  
**Distribution.** SE Bahia and NE Minas Gerais, in E Brazil.



**Descriptive notes.** 18-19 cm; 23-28 g. Male has crown, head side and upperparts grey, wings and graduated tail blackish-grey, wing-coverts edged white at tips; throat black, edged by pale moustachial region; underparts pale grey, darker on flanks and crissum; iris bright red. Female is similar to male, except crown and nape russet, throat white, underparts paler. **Voice.** Male and female loudsong a series (e.g. 9 notes, 2-9 seconds) of evenly paced whistles, initial notes rise and terminal ones fall in intensity and pitch; female often starts in middle of male song. Calls an abrupt, indistinct compound note sounding like

"brt", a sharp upslurred "seep", soft chatters, and short (e.g. 0.9 seconds) chattering rattle that decelerates.

**Habitat.** Understorey of hillside deciduous forest (annual precipitation 800-1000 mm) with many "cipós", or lianas, such habitat known locally as *mata-de-cipó*, having variably open understorey characterized in places by large patches of terrestrial bromeliads (*Aechmea*). To lesser extent, found also at ecotones between this habitat and relict humid forest on ridgetops, to 1000 m, and between *mata-de-cipó* and taller *caatinga* scrub.

**Food and Feeding.** Feeds on various insects and arachnids; recorded prey items include orthopterans (Acrididae, Tettigoniidae, Gryllidae), cockroaches (Blattoidea), winged termites (*Eutermes*), and spiders. Closely associated partners, individuals, or family groups forage mostly 0-4 m above ground, occasionally to 7 m; mostly on ground and among blades of large terrestrial bromeliads, also above ground within vine tangles. Moves deliberately, by heavy hops, separated by pauses of 1-5 seconds or more to scan for prey; habitually pounds tail down emphatically, then slowly raises it, much in the manner of *Pyriglena*. Frequently drops from low perch to ground to seize prey, or perch-gleans from leaves (mostly their undersides), vines and branches by reaching up, out or down, or makes short upward-directed jump-gleans. Spends much time in rummaging in leaf litter trapped in interior of terrestrial bromeliads, often tosses out trapped dead leaves with its bill.

**Breeding.** Little known. Breeding activity thought to begin in Oct (coinciding with normal dry season in region) and to decline in Dec-Feb with onset of rains; a female with undeveloped ovaries in early Jun; males at Jequié and Boa Nova noted as repeatedly singing spontaneously in Oct and in Jan-Feb. Recently built nest thought to be of this species found in Oct, roughly ovoid, similar in shape to nests of *Pyriglena*, 30 x 13 cm, composed of dry leaves, moss and tendrils, and placed in base of terrestrial bromeliad (*Aechmea*) near ground; territory reported by some workers to be small, pair using area of roughly 0.84 ha (home ranges barely 50 m across, separated from other territories by 100-200 m), although tape-playback experiments have lured birds from distances in excess of 100 m.

**Movements.** Resident.

**Status and Conservation.** ENDANGERED. Restricted-range species: present in Deciduous Forests of Bahia EBA. Although this species is still fairly common in appropriate habitat, its total range is extremely small, put at less than 3000 km<sup>2</sup>; global population thought to number 1000-2500 individuals, and probably declining. Dry-forest fragments in E Bahia totalled c. 965 km<sup>2</sup> in early 1970s, and by 1990 only 5-20% of primary dry forest estimated to remain. Furthermore, *mata-de-cipó* forest is steadily being cleared throughout the region, mainly for cattle pastures and coffee plantations, but also for firewood extraction and production of fence posts. Jequié-Boa Nova area perhaps the species' main stronghold, but clearing of all native vegetation around Boa Nova has increased markedly in the past few years. Establishment of a *mata-de-cipó* forest reserve in the region is urgently needed, and would provide an important refuge for many other regional endemics, including similarly threatened *Formicivora itheringi*; suitable areas exist just S of Jequié, where both species were still fairly common in Jan 2000. Remnant forests in nearby Minas Gerais (Fazenda Santana) recently found to harbour this species are also potential refuges.

**Bibliography.** Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), David & Gosselin (2002b), Isler & Whitney (2002), King, W.B. (1978/79), Naumburg (1934), Ribeiro (1990), Ribon & Maldonado-Coelho (2001), Ridgely & Tudor (1994), Sick (1993, 1997), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Teixeira (1987a), Wilkinson & Smith (1997), Willis & Oniki (1981a), Zimmer (2003a).

# Genus *MYRMOBORUS* Cabanis & Heine, 1859

## 153. White-browed Antbird

### *Myrmoborus leucophrys*

**French:** Alapi à sourcils blancs **Spanish:** Hormiguero Cejiblanco  
**German:** Weißstirn-Ameisenschnäpper

**Taxonomy.** *Pithys leucophrys* Tschudi, 1844, Montaña de Vitoc, Junín, Peru.  
Similar to other members of genus in morphology, vocalizations and behaviour. Races possibly constitute more than one species, while some appear to represent no more than clinal or individual plumage variation; also, possibly distinct but undescribed populations may exist within geographical ranges of races listed; taxonomic study needed. Population S of R Amazon in Pará and N Mato Grosso currently included in nominate race, but considered by some to be part of *angustirostris*; conversely, that on N bank between R Japurá and R Negro placed with latter, but possibly closer to nominate. Birds from C Brazil and N Bolivia described as race *griseigula*, but appear to intergrade with nominate with no clear boundary; considered better synonymized with latter. Four subspecies recognized.

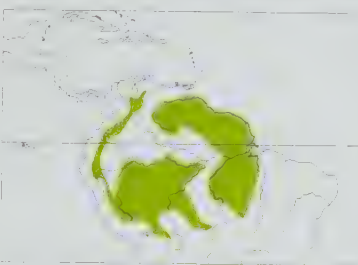
#### Subspecies and Distribution.

*M. l. angustirostris* (Cabanis, 1848) - S Venezuela (Amazonas, Bolívar), the Guianas and Brazil N of R Amazon (N bank between R Japurá and R Negro, also N Roraima E to Amapá).

*M. l. erythrophrys* (P. L. Sclater, 1855) - S or E slope of Andes in NW Venezuela (Lara, Táchira, Barinas, Apure) and Colombia (except S of R Putumayo).

*M. l. koenigorum* O'Neill & Parker, 1997 - C Peru (upper Huallaga Valley, in Huánuco).

*M. l. leucophrys* (Tschudi, 1844) - extreme S Colombia (S of R Putumayo), E Ecuador (on or near E slope of Andes), E Peru (in N only on or near E slope and also E of R Ucayali), S Amazonian Brazil (E to R Madeira, also in Pará from both banks of R Tapajós E to R Tocantins, S to Acre, Rondônia and SW & N Mato Grosso) and NE Bolivia (Pando, La Paz, Beni, Cochabamba).



**Descriptive notes.** 12-13 cm; 18-22 g. Male nominate race has white forehead and broad supercilium; rest of plumage dark bluish-grey, palest on rear underparts, darker wings and tail; head side, chin and throat black, sharply contrasting with grey rest of underparts, throat spotted with grey in SC part of range ("*griseigula*"); underwing-coverts pale whitish-grey. Female has forehead and broad supercilium cinnamon to yellow-buff, crown reddish-tinged olive-brown, lores and side of head black, upperparts olive-brown (becoming reddish-brown towards E), tail and wings dark yellowish-brown, wing-coverts tipped pinkish to pale buff-brown; throat and underparts white, sides marked with blackish-grey, flanks light olive-grey; underwing-coverts white. Race *angustirostris* resembles nominate, but male typically much paler, female supercilium paler, especially behind eye, and contrasting sharply with crown, paler wing-covert spots often nearly white; *erythrophrys* male has white on forehead and supercilium more extensive, throat patch less sharply defined, female has supercilium redder and darker, contrasting little with crown; *koenigorum* male has entire crown white, black of throat extending into breast, female very like previous, supercilium not sharply contrasting with crown. **Voice.** Male loudsong a long (e.g. 4 seconds) trill typically increasing in intensity and pace initially, dropping slightly in pitch at end; female shorter and often rising in pitch initially; regional differences in loudsong pace substantial. Calls include short whistle (c. 0.3 seconds), quality varying regionally from clear to nasal or burry, also short "chip" (may not occur in all regions), and short, rather high-pitched rattle diminishing in intensity and pitch and typically repeated rapidly at short intervals.

**Habitat.** Variety of disturbed or edge habitats in borders and understorey of evergreen forest and adjacent tall second growth, mostly below 800 m; to 1700 m in Andes. Specific habitat preferences appear to vary regionally. In Amazonia, most often near water in *várzea* and transitional habitats, particularly where tall shrub cover, and in *Heliconia* thickets in floodplain-forest; in some areas also occupies bamboo thickets in nearby upland forest. On slopes of Andes as well as in NE of range (race *angustirostris*) more widespread in shrubby forest borders and densely vegetated light-gaps (especially treefalls) within *terra firme* forest, although equally common in water-related habitats such as thickets along streams. In S Venezuela (Amazonas), even occupies shrubby margins of savanna woodland on white-sand soils.

**Food and Feeding.** Feeds on variety of insects and spiders. Stomach contents of two specimens from Brazil included orthopterans, hemipterans, beetles (Curculionidae and others), ants (Formicidae), and a large wolf spider (Lycosidae); recorded prey from Surinam includes curculionid beetles, lepidopterans, homopterans, hymenopterans (Apidae, Meliponidae, Formicidae), spiders. Closely associated partners, individuals, or family groups forage mostly 0-1 m above ground, rarely to 3 m in treefalls or climbing vine tangles, usually apart from mixed-species flocks; mostly where semi-open but continuous, shrubby undergrowth is present within 2 m of ground. Moves deliberately from one vertical stem to another and on fallen suspended branches and logs by wing-assisted hops or short flights, or by hopping on ground between perches, with frequent pauses of a few seconds to scan for prey; pounds tail downwards, then slowly raises it. Clings laterally, with bottom leg extended and top leg flexed, to slender vertical stems, from which it drops or sallies to ground to seize prey, then jumps back up again, or reaches up, out or down to perch-glean prey from leaves, stems and branches with quick stabs of the bill; also makes short (less than 40 cm) sallies or shorter jump-gleans out or up to take prey from vegetation and branches; also clambers along low inclined or horizontal perches, particularly in fallen and broken bamboo stems and fallen tree branches; spends much time in hopping on ground beneath cover of overhanging broad-leaved vegetation. Regularly follows swarms of army ants (*Eciton burchelli*, *Labidus praedator*) for long periods (up to 253 minutes recorded), but usually remains mostly on periphery of swarms if these attended by "professional" ant-following species such as *Rhagamatorhina*, *Phlegopsis* or *Gymnopolthys*; most prey captures over ants are by sallies from low perch to ground, or by hopping on ground and direct-gleaning or lunging; sometimes sallies upwards to foliage, stems or branches. Hops on ground more than does *M. myotherinus*, which in some areas occurs at same ant swarms.

**Breeding.** Little known. Nest found in Peru (Madre de Dios) in May (details previously unpublished); appeared to be constructed from bamboo leaves, and placed on ground at base of small shrub; 2 eggs, whitish, speckled brown.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of its extensive range. Numerous parks and reserves exist in virtually every country in which it occurs. The species' ability to occupy a variety of second-growth habitats renders it less vulnerable to disturbance than are many other antbird species. Populations confined to lower Andean slopes and inter-Andean valleys potentially at greatest risk; not only are their ranges more restricted,



but foothill forest throughout Andes is being cleared for agriculture and human settlement at alarming rates.

**Bibliography** Alvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Cory & Hellmayr (1924), Dick *et al.* (1984), Foster *et al.* (1994), Halfer & Fitzpatrick (1985), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, M.L. *et al.* (1998), Isler, P.R. & Whitney (2002), Killeen & Schulenberg (1998), Marra (1989), Marra & Remsen (1997), Mason (1996), Moskovits *et al.* (1985), Novaes (1980), O'Neill (1974), O'Neill & Parker (1997), Oniki & Willis (1972), Parker & Bailey (1991), Remsen (1986), Remsen *et al.* (1986), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robbins (2003b), Robinson & Terborgh (1997), Schubart *et al.* (1965), Servat (1996), Sharpe *et al.* (2001), Sick (1993), Sneath (1913), Snyder (1966), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh & Weske (1969), Terborgh, Fitzpatrick & Immons (1984), Terborgh, Robinson *et al.* (1990), Tostain *et al.* (1992), Willis (1985b), Zimmer, J.I. (1932d), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997), Zimmer, K.J., Parker *et al.* (1997).

## 154. Ash-breasted Antbird

### *Myrmoborus lugubris*

French: Alapi lugubre German: Värzeaameisenschnäpper Spanish: Hormiguero Lúgubre

**Taxonomy** *Myrmoborus lugubris* Cabanis, 1847, no locality = probably Pará (Belém?), Brazil. Similar to other members of genus in morphology, vocalizations and behaviour. Races *stictopterus* and *femininus*, with geographical distributions interposed between nominate and *berlepschi*, are apparently also phenotypically intermediate between those; their taxonomic status is in need of review. Four subspecies recognized.

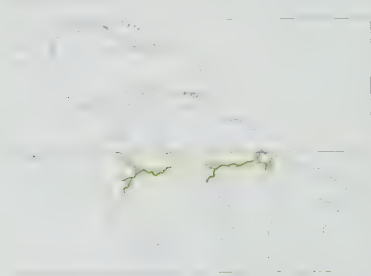
#### Subspecies and Distribution.

*M. l. berlepschi* (Hellmayr, 1910) - NE Peru (Loreto) and extreme W Amazonian Brazil (R Solimões) to Tonantins).

*M. l. stictopterus* Todd, 1927 - C Amazonian Brazil (lower R Negro and nearby R Solimões).

*M. l. femininus* (Hellmayr, 1910) - lower R Madeira, in SC Amazonian Brazil.

*M. l. lugubris* (Cabanis, 1847) - R Amazon, from R Madeira E to Baía do Guajará, occurring in CE Amazonas and NC Pará.



**Descriptive notes.** 12-13 cm; 20-23 g. Male nominate race has forehead whitish-grey, crown and upperparts bluish-grey, wings and distal tail somewhat darker, greater and median wing-coverts indistinctly tipped white; head side and throat black, remaining underparts whitish-grey, darkest on flanks, underwing-coverts pale grey; iris dark red. Female has crown and side of head yellowish red-brown, upperparts, wings and tail reddish yellow-brown, wing-coverts indistinctly tipped buff, throat and underparts white, flanks and crissum pale yellowish-brown, underwing-coverts white with yellowish-brown tinge.

Races vary slightly in male's depth of colour and distinctness of wing-covert tips (males possibly not diagnosably different in plumage); *berlepschi* female has olive cast on crown and upperparts, reddish yellow-brown wing-coverts, black lores, ocular region and ear-coverts forming mask, white throat, faint band of dots on lower throat, grey underparts fading to whitish on belly; *stictopterus* female differs from previous in more rufescent tinge above, paler underparts, larger mask, no throat spots; *femininus* female resembles previous, but more rufescent above, darker below. Voice. Male loudsong a long series (e.g. 22 notes, 4-8 seconds) of sharp whistles, descending in pitch and becoming more burry, pace varies regionally; female loudsong apparently shorter. Calls include short rattle like that of *M. leucophrys*, also abrupt note, and longer, mostly downslurred note.

**Habitat.** Understorey of lowland evergreen river-edge forest, primarily on river islands, locally on "mainland" banks of R Amazon and some larger tributaries; to c. 125 m. Throughout most of range, primarily a bird of white-water river islands and adjacent mainland várzea, mainly in taller groves of *Cecropia* forest and swampy thickets of *Heliconia*; also in vine-tangled margins of *igapó* forest on river islands in lower R Negro.

**Food and Feeding.** Feeds on insects and spiders. Closely associated partners, individuals, or family groups forage mostly 0-1 m above ground, rarely to 2 m, usually apart from mixed-species flocks. Deliberate forager; moves from perch to perch by short hops, wing-assisted hops, and short flights, separated by frequent pauses of a few seconds to scan for prey; regularly pounds tail downwards emphatically, then raises it in slower, more relaxed manner. Often clings laterally, lower leg extended and top one flexed, to slender vertical stems (particularly of *Heliconia* and *Piper*), from which it peers about and frequently drops to ground to seize prey, or perch-gleans by reaching up, out or down with quick stabs of the bill; also commonly hops along inclined and horizontal perches, particularly exposed roots and tangles of woody vines and lianas, from which it perch-gleans mostly from bark surfaces (less frequently from foliage) by reaches or by short horizontal lunges; often hops on ground, gleaning items directly from surface of leaf litter; occasionally makes short (less than 30 cm) sallies to overhead surfaces.

**Breeding.** In seasonally flooded habitat apparently breeds when water levels low. Nest found on island in Anavilhanas Archipelago, on R Negro (Brazil), in Sept (details previously unpublished); dome-shaped, c. 15 cm high, entrance c. 4 cm in diameter and on one side at ground level, exterior constructed entirely of dead leaves, leaf skeletons and few thin dead twigs and looking exactly like surrounding leaf litter, partially decomposed leaf at least 15 cm long placed at slight angle c. 1 cm above entrance, situated on ground next to low plants barely taller than nest roof and near large, partially moss-covered logs; female observed to bring food to nestlings.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of its linear and somewhat fragmented range. Only few existing parks or reserves within its range include extensive river-island habitats and populations of this species within their boundaries. One significant exception is Rio Negro State Park (4360 km<sup>2</sup>), in Brazil, which encompasses the extensive Anavilhanas Archipelago; this park alone protects a large, viable population. Incorporation of more white-water islands into formally protected areas would offer additional security to this species, as well as to many obligate river-island birds that are dependent on more ephemeral successional habitats.

**Bibliography** Cohn-Haft & Whitney (2003b), Cory & Hellmayr (1924), Granizo (2002), Halfer & Fitzpatrick (1985), Hilty & Brown (1986), Isler & Whitney (2002), Parker (2003a), Remsen & Parker (1983), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rosenberg, G.H. (1985, 1990), Russell & Lamm (1978), Sick (1993), Zimmer (2003a).

## 155. Black-faced Antbird

### *Myrmoborus myotherinus*

French: Alapi masqué

German: Schmalbrauen-Ameisenschnäpper

Spanish: Hormiguero Carinegro

**Taxonomy.** *Thamnophtilus myotherinus* Spix, 1825, no locality = Fonte Boa, Rio Solimões, Brazil. Similar to other members of genus in morphology, vocalizations and behaviour. Present species in need of taxonomic study; races possibly constitute more than one species, while some may represent only clinal plumage variation. Revised interface between nominate and race *elegans* is based on preliminary analysis of vocalizations. In addition, latter intergrades with described race *napensis* (E Ecuador, NE Peru) with no clear boundary between them; the two considered better synonymized pending further review. Seven subspecies recognized.

#### Subspecies and Distribution.

*M. m. elegans* (P. L. Sclater, 1857) - S Venezuela (W Bolívar, S Amazonas), extreme NW Amazonian Brazil (N Roraima, NW Amazonas in upper R Negro region), and SE Colombia (Meta, Vaupés) S to C Peru (N of R Amazon, W of R Ucayali).

*M. m. myotherinus* (Spix, 1825) - extreme E Peru (E of R Ucayali), SW Amazonian Brazil (W Amazonas, Acre) and NW Bolivia (Pando S to La Paz, Cochabamba and WC Santa Cruz).

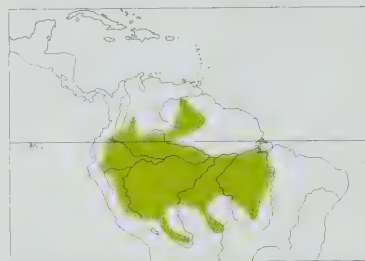
*M. m. incanus* Hellmayr, 1929 - NW Amazonian Brazil (N bank of R Solimões between R Japurá and R Içá).

*M. m. ardesiacus* Todd, 1927 - R Japurá E to lower R Negro.

*M. m. proximus* Todd, 1927 - S bank of R Amazon between R Purus and R Madeira.

*M. m. sororius* (Hellmayr, 1910) - SC Amazonian Brazil (SE Amazonas, Rondônia).

*M. m. ochrolaema* (Hellmayr, 1906) - E from R Madeira and R Roosevelt to R Tocantins and S Marajó I, and S to SW & C Mato Grosso.



**Descriptive notes.** 12-13 cm; 16-22 g. Small white interscapular patch. Male nominate race is dark bluish-grey above, wings and tail slightly darker, wing-coverts black with small white tips; lores, head side and throat black, hint of a pale supercilium; pale grey below, sides, flanks and crissum slightly darker, underwing-coverts pale grey; iris deep red. Female has crown, upperparts, wings and tail dark greyish olive-brown, wing-coverts black, tipped pale yellowish-brown, lores and side of head blackish, throat white, small black spots on lower throat, underparts light buff, tinged olive on sides, flanks and crissum, pale grey

underwing-coverts. Subadult male at various stages of development has brown intermixed with grey of upperparts, head side grey, flight-feather edges brownish, paler underparts. Races differ from nominate mainly in darkness of coloration of male and general coloration and pattern of female: *elegans* male is slightly paler, female is dark olive-grey above with wing-covert spots darker yellow-buff, reddish below, sides and flanks brown; *incanus* female has wing-covert tips white, underparts white, flanks and crissum pale ochraceous to tawny-olive; *ardesiaceus* male is slate-grey above and below, female olive-brown above with wing-covert tips sometimes tinged buff, deep ochraceous below extensively mixed with white, no darker suffusion on flanks and crissum; *proximus* is darker above and below, female reddish yellow-brown with few throat spots; *sororius* female has throat pale buff to light ochraceous brown, underparts darker, usually darker and redder breastband with few throat spots; *ochrolaema* male is paler, whitish below, female is slaty olive above with supercilium and wing-covert spots rufous-buff, throat and underparts evenly coloured deep yellow-ochre, no throat spots. Voice. Male loudsong nominate race a countable series (e.g. 13 notes, 3-7 seconds) of evenly spaced, somewhat unclear (frequency-modulated) notes, pitch and intensity rising initially, falling terminally, notes become longer throughout; loudsongs of other races vary in length and shape of notes, pace of song, pattern of peak frequencies of notes, and intensity pattern; female songs similar but shorter. Calls include rattle, like that of congeners but tending to be longer; also abrupt note and longer downslurred note.

**Habitat.** Understorey of lowland and foothill evergreen forest and adjacent tall second-growth woodland, mostly below 1000 m; to 1350 m in Andes. Typically in densely vegetated light-gaps (particularly around treefalls) inside *terra firme* forest (rare or absent in *várzea* or *igapó*), but ventures into more open undergrowth of surrounding forest more commonly than does *M. leucophrys*.

**Food and Feeding.** Little published. Feeds on variety of insects and spiders. Does M. associated pair-members, individuals, or family groups forage mostly 0-2 m above ground (occasionally slightly higher), usually apart from mixed-species flocks; mostly in semi-open but continuous shrubby understorey vegetation, occasionally in and around treefall tangles and bamboo. Deliberate forager, progressing by short hops, wing-assisted hops and short flights, with pauses of a few seconds to scan for prey; regularly pounds tail downwards emphatically, then slowly raises it in relaxed manner to just above horizontal before pounding it down again, also flicks both wings constantly. Selects low, mostly horizontal and inclined perches (e.g. partly suspended fallen branches and fallen logs), from which it regularly drops to ground to seize prey before hopping back up; also perch-gleans items from tops and bottoms of live leaves and from stems, vines and branches by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; also regularly makes short (less than 30 cm) fluttering sallies or even shorter jump-gleans to take prey from underside of overhanging vegetation. Regularly attends army ants (both *Eciton* species, *Labidus praedator*) to feed on flushed arthropods; follows swarms for prolonged periods (more than 90 minutes), but subordinate to "professional" followers such as *Rhagmatophila*, *Phlegopsis* and *Gymnophis*, and usually relegated to periphery of *Eciton* *burckhelli* swarms attended by those species; at swarms of smaller *Labidus praedator*, where "professional" ant-following antbirds often absent, is more likely to forage over centre of swarm, and has been observed repeatedly and aggressively displacing individuals of *Hylophylax poeclimotus* that ventured within 1 m. Prey captures over ants most often made by hopping from low inclined or horizontal perch to ground to seize item from leaf litter, before hopping quickly back up; occasionally sallies to vegetation, branches or the air to glean prey flushed upwards, away from ants; does not hop on ground so much as does *M. leucophrys*, which in some areas can be found at same swarms.

**Breeding.** Little known. In Ecuador, nest found in Feb in Napo (details previously unpublished) and season thought to be May-Feb at Limoncocha on basis largely of gonadal and moult condition of specimens; two nests in Oct-Nov in SE Peru (Madre de Dios). In Peru, nest domed, height 13-14 cm, width/diameter 11-22 cm, dimensions of inner chamber c. 7 cm × 10 cm high, nest material in four layers, innermost black palm fibre, next dry palm and other leaves, then dry flexible vine stems, with outermost layer dry leaves (making nest very inconspicuous), placed on ground be-



tween two branches (possibly for support) and, in one case, also under a liana; Ecuador nest described as covered cup-nest placed on ground. Clutch 2 eggs, 1 in one nest (Peru), white to off-white, spotted or splashed with purple or brownish-maroon.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common to common over most of its extensive range. Regions occupied by species include numerous large protected areas, e.g. Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, Serra do Divisor, Jaú and Tapajós National Parks, Cristalino State Park and Caxiuanã National Forest, in Brazil, and Madidi National Park, in Bolivia; also vast areas of intact suitable habitat which, although not formally protected, seem to be at little risk of being developed in near term.

**Bibliography.** Álvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Cory & Hellmayr (1924), English (2003), Foster *et al.* (1994), Haffer & Fitzpatrick (1985), Hellmayr (1929b), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, M.L. *et al.* (1998), Isler, P.R. & Whitney (2002), Johns (1991), Londoño (2003), Marra (1989), Marra & Remsen (1997), Munn & Terborgh (1979), O'Neill (1974), O'Neill & Pearson (1974), Oren & Parker (1997), Parker & Bailey (1991), Remsen (1986), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Servat (1996), Sick (1993), da Silva & Oniki (1988), Stotz *et al.* (1997), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Terborgh & Weske (1969), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Willard *et al.* (1991), Willis (1985b), Zimmer, J.T. (1932d), Zimmer, K.J. (2003a), Zimmer, K.J., Parker *et al.* (1997).

156. Black-tailed Antbird

*Myrmoborus melanurus*

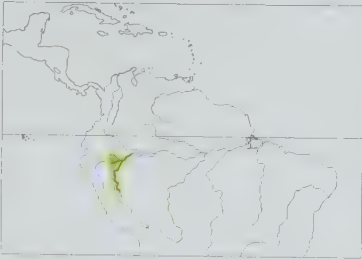
**French:** Alapi à queue noire **Spanish:** Hormiguero Colinegro  
**German:** Schwarzkopf-Ameisenschnäpper

**Taxonomy.** *Hypocnemis melanura* P. L. Selater and Salvin, 1866, Cashiboya, in Loreto, and upper Rio Ucayali, Peru.

Similar to other members of genus in morphology, vocalizations and behaviour. Monotypic.

**Distribution.** NE & EC Peru (Loreto, Ucayali, NE Pasco) and adjacent Brazil (right bank of R Javari, extreme W Amazonas).

**Descriptive notes.** 12 cm. Male has black head, remaining plumage very dark grey, some individuals with white interscapular patch; wing-coverts blackish, thinly edged white at tips, underwing-coverts white; iris deep red. Female is reddish-brown above, upperparts slightly yellow-tinged, wings and tail dark brown, wing-coverts blackish-brown, edged white at tips, head side brownish-grey, throat and centre of belly white, breast variably buff to yellowish-brown, flanks and crissum yellowish-brown. **VOICE.** Male loudsong a moderately long series (e.g. 18 notes, 2.7 seconds) of clear notes, initially flat in pitch, then descending as notes accelerate; female loudsong shorter, descends relatively more towards end. Calls include short (e.g. 0.05 seconds) harsh note, longer (e.g. 0.3 second) harsh note, and short series (e.g. 8 notes, 0.8 second) of clear notes that speed up while dropping down scale.



Samiria Reserve, seems to be associated with damp soil at water edge and may shift in accordance with fluctuating water levels.

**Food and Feeding.** Little known. Presumably feeds on various insects and spiders, as congeners. Forages close to ground, hopping on vines and partially suspended branches in woody undergrowth. Pounds tail emphatically downwards and then raises it slowly, like others of genus.

**Breeding.** Nest-building observed in Loreto (lower R Yarapa) in Jul (details previously unpublished); in seasonally flooded habitat, presumably nests when water levels low. Both sexes brought nesting material, nest appeared rather bulky and roughly globular, c. 20 cm in diameter, constructed entirely of dead plant material. exterior mostly of palm and other leaves, upper section with distinct cavity c. 4 cm across that entered cup-shaped internal chamber, top presumably still to be added to form complete dome; concealed on ground in clump of grass atop angled stick c. 2 cm in diameter situated at base of sapling 2.5 cm thick, in generally open area dominated by spiny palms (*Bactris*).

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Upper Amazon-Napo Lowlands EBA. Occurs in a relatively small range along R Maraón, R Ucayali and upper R Amazon and some of their tributaries; patchily distributed and apparently rare; also poorly known. Few formally protected reserves with *várzea* forest exist in this region; primary one is Pacaya-Samiria National Reserve (2,080,000 ha), where several pairs have recently been found. No immediate threat from habitat loss, but the flooded-forest ecosystem on which this species depends is vulnerable owing to its accessibility for resource extraction by water transport; any major disturbance in vicinity of the few known sites where it occurs would be cause for alarm. Most urgent requirement is for more survey work to locate any additional populations of this antbird, to determine more accurately its distributional boundaries, and to shed more light on its ecological requirements. Once this accomplished, directed establishment of additional reserves encompassing known populations of this species is desirable.

**Bibliography.** Álvarez (1994), Begazo & Valqui (1998), Collar *et al.* (1994), Cory & Hellmayr (1924), González (1998), Haffer & Fitzpatrick (1985), Isler & Whitney (2002), O'Neill & Pearson (1974), Remsen & Parker (1983), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Whitney (2003a, 2003b), Whittaker (2003a), Zimmer (1932d).







Genus *HYPOCNEMIS* Cabanis, 1847

## 157. Warbling Antbird

*Hypocnemis cantator*

French: Alapi carillonneur

Spanish: Hormiguero Cantarín

German: Rostflanken-Ameisenschnäpper

**Taxonomy.** *Formicarius Cantator* [sic] Boddaert, 1783, Cayenne, French Guiana.

Although genus traditionally placed after *Myrmoborus*, it appears closely related to *Drymophila*. Present species regarded as sister-species of *H. hypoxantha*; recent genetic study, however, indicates considerable genetic distance between the two, suggesting that speciation occurred perhaps several million years ago. Present species as herein constituted almost certainly consists of more than one species, as races *peruviana* and *collinsi* known to occur together in same habitat, and some types of vocalizations vary substantially among races; taxonomic study currently being undertaken. Birds from N of range (SE Venezuela, Guyana, N Brazil) described as race *notata*, but considered indistinguishable by plumage or vocalizations from nominate. Ten subspecies recognized.

**Subspecies and Distribution.**

*H. c. cantator* (Boddaert, 1783) - extreme EC Venezuela (NE Bolívar), the Guianas and NE Amazonian Brazil (lower R Negro E to Amapá).

*H. c. flavescens* P. L. Sclater, 1865 - S Venezuela (W & S Bolívar, Amazonas), extreme NW Amazonian Brazil (upper R Negro drainage and N Roraima) and EC Colombia (Guainía, Vaupés, N Caquetá).

*H. c. saturata* Carriker, 1930 - S Colombia (base of Andes in from Meta S to Putumayo, and S Amazonas) S to NE Peru (N of R Amazon and R Marañón) and WC Amazonian Brazil (region immediately N of R Amazon and E to lower R Negro).

*H. c. peruviana* Taczanowski, 1884 - EC Peru (S of R Amazon and R Marañón to E Cuzco and N Madre de Dios, except Andean foothills), SW Amazonian Brazil (E to R Madeira, S to Acre) and NW Bolivia (Pando, N La Paz, N Beni).

*H. c. subflava* Cabanis, 1873 - Andean foothills in EC Peru (Huánuco S to Cuzco).

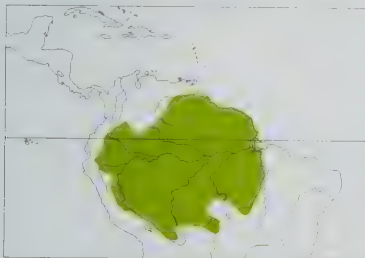
*H. c. collinsi* Cherrie, 1916 - S Peru (SE Ucayali, E Cuzco, Madre de Dios, Puno), extreme SW Amazonian Brazil (Acre) and WC Bolivia (Pando, La Paz, W Beni, Cochabamba).

*H. c. ochrogyna* J. T. Zimmer, 1932 - E Bolivia (E Beni, Santa Cruz) and SC Amazonian Brazil (Rondonia, W Mato Grosso).

*H. c. implicata* J. T. Zimmer, 1932 - SC Amazonian Brazil (E from lower and middle R Madeira to R Tapajós/Teles Pires).

*H. c. striata* (Spix, 1825) - R Tapajós/Teles Pires E to R Xingu, S to NC Mato Grosso.

*H. c. affinis* J. T. Zimmer, 1932 - R Xingu E to R Tocantins, S to E Mato Grosso.



**Descriptive notes.** 11-12 cm; 10-14 g. Male nominate race has black crown streaked white centrally, white supercilium, olive-grey upperparts, centre of back spotted black and white over white interscapular patch, rufous rump; flight-feathers brown, edged light yellowish olive-brown, wing-coverts black, tipped white, tertials and tail brown, tipped pale buff; side of head speckled black and white, throat very pale grey, breast and sides spotted black and white, centre of belly white, faintly tinged yellow, flanks and crissum rufous; underwing-coverts white, tinged yellowish-brown. Female is similar to male, but crown

streaks pale buff, interscapular patch lacking or minimal, wing-coverts olive-brown with pale buff tips. Juvenile male is patterned like adult but duller, lacks interscapular patch and back streaks, breast dull brown; subadult male resembles female. Race *flavescens* has more black and white spots above than nominate, wings brownish-grey, underparts tinged yellow; *subflava* is paler overall, greyer above with broader and heavier black and white markings, grey-brown remiges and tail, yellower below, rear underparts light buff; *collinsi* resembles last, but paler, purer grey with few black and white spots above, female light olive-grey above; *peruviana* is darker, interscapular patch larger, much black and white spotting above, white with more dark spots below, rear underparts deep rufous, female upperparts also more heavily marked with dusky spots and buff streaks; *saturata* is very like previous but darker; *implicata* is intermediate between nominate and last two in contrast of upperpart colours, less rufescent than previous, middle of belly lighter; *affinis* resembles previous, but male appears more heavily marked, female on other hand less heavily marked; *striata* male has upperparts contrastingly black and white and is quite rufescent, female upperparts also strongly streaked; *ochrogyna* female has upperparts light ochraceous brown. VOICE. Male loudsong a series of clear notes that become raspy rather abruptly (all races), but otherwise variable among populations in pace, change of pace, pattern of peak frequencies, shapes of notes; female loudsong usually started just before or after male's terminates, typically 6-9 notes (sometimes more or fewer) that descend in frequency, differs among populations in pace, change of pace, note and interval lengths, frequency pattern of initial notes. Each population also has stereotyped call, often heard in encounters between neighbours, that is even more diverse geographically, e.g. a brief repetitive series of simple notes at same pitch, a long whistle followed by abrupt note leading into raspy note, a long note followed by a series of abrupt notes, and a doublet of broad raspy notes; also a sharp "chit".

**Habitat.** Understorey to mid-storey of humid evergreen-forest borders (*terra firme*, transitional, *várzea*), densely vegetated light-gaps (particularly around treefalls) and stream courses within forest, and adjacent tall second-growth woodland; lowlands, to 1300 m in Guyana, to 1400 m in Andes. Race *collinsi* restricted to stands of *Guadua* bamboo in some parts of its range.

**Food and Feeding.** Little published. Feeds on various insects and spiders. Stomach contents from Brazil (three specimens, nominate race) included hemipterans, orthopterans, beetles (Coleoptera), ants (Formicidae), spiders; from Surinam curculionid beetles, ants (Myrmicinae); two specimens of race *striata* contained hemipterans, orthopterans, chrysomelid beetles, bees (Apoidea), spiders. Closely associated partners, individuals, or family groups forage mostly 0-6 m above ground, sometimes to 12 m; usually alone, but sometimes with mixed-species flocks of other insectivores. For-

ages mostly in dense tangles of vines, crowns of densely foliated understorey trees and shrubs, bamboo thickets, and along clusters of hanging vines and epiphytes along larger trunks; more often at forest edge and in treefall clearings within primary forest. Active but deliberate forager; progresses by short hops, separated by frequent pauses of 1-5 seconds to scan for prey; flicks both wings constantly, and regularly swings tail from side to side. Most prey perch-gleaned from live leaves (mostly from undersides), stems and vines, by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; also makes short (less than 30 cm), mostly diagonal sallies, or shorter vertical jump-gleans to take prey from underside of overhanging vegetation. Also regularly scans and lightly probes suspended dead leaves; classified in one study as "occasional user" of dead leaves; in another study as "regular user", with 31% of all observed foraging manoeuvres targeted at dead leaves. Regularly attends army-ant swarms (records from Venezuela, Guyana, Colombia, Ecuador, Brazil), both of *Eciton burchelli* and of *Labidus praedator*, but often for short periods of time, with individuals leaving and then circling back later; when "professional" ant-following species in attendance, it sticks to periphery of swarms, taking most prey by perch-gleans or short sallies to vegetation.

**Breeding.** Season May-Oct in Surinam, Mar and Jul-Nov in French Guiana; gonadal condition of females suggests Apr-Dec in Ecuador; Jul-Aug in Brazil (single described nest). Nest usually a deep dense pouch placed 0.3-1.5 m above ground; one of nominate race in Brazil (Manaus) had external diameter 9 cm, internal diameter 5 cm, external height 14 cm, internal height 5 cm, weight 14 g, constructed from large decomposing leaves tied together with brown rhizomorphs and some mosses and rhizomorphs looped around large leaves of host plants, lining mostly of dried leaves, roots and rhizomorphs, located 37 cm up in bush (Bignoniaceae) in dense understorey; nest of same race in French Guiana had exterior covered with moss, interior of dried leaves, placed 30 cm up among leaves of a Cyclanthaceae, and one in Surinam composed mainly of moss and hanging by two "ears" from thin branch 1 m up; a nest in Colombia (Meta: race *saturata*) was suspended c. 1 m above ground, attached in two points to forked twig, shielded from view by overhanging *Heliconia* leaf; nest in SE Peru (Madre de Dios: presumably *collinsi*) differed in shape, described as a cup 10 cm in diameter, 10 cm deep, woven with dead palm fronds, dead leaves and green moss, placed 25 cm above ground in ferns and shrubs. Normal clutch 2 eggs, coloration variable (reason unexplained), eggs of *saturata* from Colombia pinkish, with purple streaks and spots mostly on larger end, of nominate race from French Guiana rosy white covered with fine rose network, darker and more spotted at larger end, of nominate from Surinam pinkish-white with small purplish-grey markings and few larger purplish spots (but another set is creamy white, sparsely spotted chocolate-brown), of nominate from N Brazil (Manaus) white with brown spots, eggs presumed of race *collinsi* from Peru (Madre de Dios) white with brownish-red specks and streaks; incubation by both parents during day, probably only by female at night, period at least 12 days; both also brood chicks, nestling period calculated as 11 days in Brazil and Surinam.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout most of its extensive range. Numerous protected areas exist in virtually every country within its range. No known threats. The near-term conservation outlook for all races is good; *subflava*, having the most restricted range, is potentially most vulnerable to habitat loss.

**Bibliography.** Alvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodriguez & Moskovits (2001), Barnett *et al.* (2002), Bates (2000, 2002), Bates *et al.* (1999), Cadena, Alvarez *et al.* (2000), Cadena, Londoño & Parra (2000), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Cox *et al.* (1992), Dick *et al.* (1984), Foster *et al.* (1994), Haeken & Rosenberg (1990), Haverschmidt & Mees (1994), Hellebrekers (1942), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. *et al.* (1998), Isler, P.R. & Whitney (2002), Johns (1991), Killeen & Schultenberg (1998), Kratter (1997a), Marra (1989, 2003), Marra & Remsen (1997), Meyer de Schauensee & Phelps (1978), Moskovits *et al.* (1985), Munn (1984, 1985), Novaes (1980), O'Neill & Pearson (1974), Oniki (1979a, 1979c), Oniki & Willis (1972, 1982), Oren & Parker (1997), Parker (2003a), Parker & Bailey (1991), Pearson (1975c, 1977a), Perry *et al.* (1997), Remsen (1986), Remsen & Parker (1983, 1984), Reynaud (1998), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schubert *et al.* (1965), Servat (1996), Sick (1993), da Silva *et al.* (1997), Snyder (1966), Stiles *et al.* (1995), Stotz (1990b), Stotz & Bierregaard (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer & Bierregaard (1995), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Terborgh & Weske (1969), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1988a, 1994), Tostain (2003), Tostain *et al.* (1992), Whitney (2003a), Willard *et al.* (1991), Willis (1977, 1984c, 1985a), Zimmer, J.T. (1932c), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997), Zimmer, K.J., Parker *et al.* (1997).

## 158. Yellow-browed Antbird

*Hypocnemis hypoxantha*

French: Alapi à sourcils jaunes

German: Gelbbrauen-Ameisenschnäpper

Spanish: Hormiguero Cejiamarillo

**Taxonomy.** *Hypocnemis hypoxantha* P. L. Sclater, 1869, "upper Amazonia".

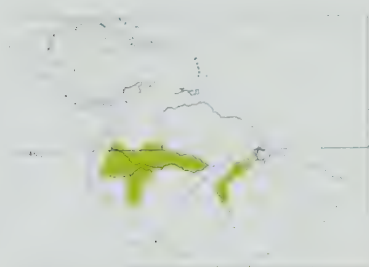
Although genus traditionally placed after *Myrmoborus*, it appears closely related to *Drymophila*. Present species regarded as sister-species of *H. cantator*; recent genetic study, however, indicates considerable genetic distance between the two, suggesting that speciation may have occurred several million years ago. Two subspecies recognized.

**Subspecies and Distribution.**

*H. h. hypoxantha* P. L. Sclater, 1869 - S Colombia (Putumayo E to Vaupés, S to Amazonas), E Ecuador, NE & EC Peru (N of R Marañón and, E of R Ucayali, S to Ucayali) and W Amazonian Brazil (N of R Amazon E to W bank of R Negro, and S of R Amazon in R Javari and upper R Jurua drainages). *H. h. ochraceiventris* Chapman, 1921 - SE Amazonian Brazil between R Tapajós/R Teles Pires and R Xingu.

**Descriptive notes.** 11-13 cm; 10-13 g. Male nominate race has crown black with white streaks centrally; buff-yellow supercilium and cheek, black lores and wide postocular streak, narrow black malar streak; upper mantle streaked black, back olive, spotted blackish, rump olive-grey; flight-feathers dark olive-grey, edged olive-yellow, wing coverts black, tipped white; tail dark olive-grey, black subapically, tipped white; throat and underparts bright yellow, sides streaked black, flanks mixed yellow and blackish; underwing-coverts light yellow. Female is similar to male, except crown streak and wing-covert tips light yellow-buff, generally paler. Subadult male resembles female, some individuals tinged buff on breast and belly. Race *ochraceiventris* is larger, browner above, remiges and tail edged yellow-ochre, posterior underparts ochraceous, female more spotted across breast. VOICE. Male loudsong a descending series becoming raspy, somewhat similar to that of some races of *H. cantator* but, most audibly, notes change gradually, rather than abruptly, from clear to raspy; female similar, but typically shorter and descending more sharply. Calls include





triplet of upslurred whistles peaks of which descend slightly, also sharp "chip" and harsh, short (e.g. 0.4 seconds) "chirr".

**Habitat.** Understorey to mid-storey of lowland and foothill evergreen forest; to 900 m. Nominant race more confined to upland (*terra firme*) forest than is *H. cantator*, with territories frequently centred on densely vegetated light-gaps (particularly around treefalls) within forest, although does forage out into more open parts of forest interior; also locally in white-sand forest (*varillal*) in NE Peru. Race *ochraceiventris* may not be so confined to forest interior, and is sometimes found in bamboo

patches in remnant woodlots and shrubby thickets at edge of pasture.

**Food and Feeding.** Little published. Feeds on insects and spiders. Closely associated partners, individuals, or family groups forage mostly 1-10 m above ground; alone or, sometimes, with mixed-species flocks of other insectivores (perhaps joins such flocks more often than does *H. cantator*). Forages mostly in crowns of understorey saplings and shrubs, or in vine tangles. Active but deliberate, progressing by short hops, with frequent pauses of a few seconds to scan for prey; behaviour similar to that of *H. cantator*, but possibly faster-paced; regularly pounds tail downwards 30 degrees. Perch-gleans most prey from all surfaces of green foliage, perhaps most often from undersides, also from stems, vines and branches, by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; frequently makes short (less than 30 cm), mostly diagonal sallies or even shorter vertical jump-gleans to take prey from foliage; occasionally attacks clusters of suspended dead leaves. Has been observed briefly following swarms of army ants (*Eciton burchelli*) in Colombia and Brazil.

**Breeding.** Almost nothing known. A single nest described from Colombia (Mitú) in early May: an irregular cup suspended by mossy strands 2.5 m above ground between petioles of parallel bifid epiphyte leaves; nestlings being fed by parents.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Not well known; generally regarded as uncommon throughout much of its range. Regions inhabited by this species include some large protected areas, e.g. Yasuni National Park, in Ecuador, and Jaú National Park, in Brazil, as well as large expanses of intact, suitable habitat which, while not formally protected, are at little risk of development in near future. Disjunctly distributed race *ochraceiventris*, having much smaller range than nominate, is perhaps less secure.

**Bibliography.** Alvarez (1994), Bates *et al.* (1999), Cory & Hellmayr (1924), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, M.L. *et al.* (1998), Isler, P.R. & Whitney (2002), Parker (2003a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Sick (1993), Willis (1985a, 1988b), Zimmer, J.T. (1932c), Zimmer, K.J. (2003a).

## Genus *HYPOCNEMOIDES*

Bangs & Penard, 1918

### 159. Black-chinned Antbird

#### *Hypocnemoides melanopogon*

French: Alapi à menton noir

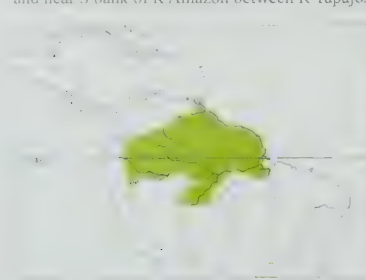
Spanish: Horniguero Barbinegro

German: Nördlicher Graumeisenschnäpper

**Taxonomy.** *Hypocnemis melanopogon* P. L. Selater, 1857, Chamicuro, Loreto, Peru; error = Guyana. Closely related to *H. maculicauda*, appearing to differ somewhat in vocalizations, but very similar in behaviour and morphology; molecular analyses and field studies in regions of apparent parapatry needed in order to establish true taxonomic relationships. Birds from Colombia, Venezuela and NW Brazil described as race *occidentalis*, but appear to intergrade with nominate; considered better merged with latter pending further analysis. Two subspecies recognized.

#### Subspecies and Distribution.

*H. m. melanopogon* (P. L. Selater, 1857) - N of R Amazon in E Colombia (S from Meta and Vichada), E & S Venezuela (E Sucre, E Monagas, Bolívar, Amazonas), the Guianas, and Brazil N of R Amazon. *H. m. minor* Gyldestenstolpe, 1941 - SC Amazonian Brazil (drainages of lower R Purus and R Madeira, and near S bank of R Amazon between R Tapajós and R Tocantins).



**Descriptive notes.** 11-12 cm; 12-16 g (male possibly heavier). Male has head and upperparts dark grey, crown darkest, wings and tail blackish-grey, wing-coverts tipped white, tail narrowly tipped white; throat black, underparts grey, palest on belly; underwing-coverts light grey; NW populations ("*occidentalis*") darker. Female is paler than male above, especially on crown; throat white, mottled light grey, grey below, patchily white on centre of belly and crissum, whitish underwing-coverts. Subadult male resembles female. Race *minor* differs from nominate in smaller size. **VOICE.** Loudsong a rising and falling series (e.g. 13 notes, 2 seconds)

accelerating as notes become shorter, except for emphatic final notes that slow down but typically do not become raspy. Calls include abrupt unclear notes rapidly given in sets of 2-5; also short (e.g. 0.5 second) raspy snarl, and short downslurred whistle sometimes sounding plaintive.

**Habitat.** Understorey of seasonally flooded evergreen forest (*várzea*, *igapó*), gallery forest, and poorly drained savanna woodland growing on white-sand soils, to 700 m. Particularly along margins of sluggish rivers, oxbow lakes, stagnant and running streams, and in flooded forest; wherever abundant overhanging woody vine tangles and partially submerged branches provide perches within reach of the water.

**Food and Feeding.** Little published. Feeds on variety of insects and spiders. Recorded prey items in Brazil include neuropterans (one 30 mm in length), coleopterans, ants (Formicidae), lepidopterans,

and spiders; in Surinam *Camponotus* ants, orthopterans (Acrididae), cockroaches (Blattidae), hemipterans, homopterans, dipterans (Tipulidae), beetles (Elateridae), and spiders. Closely associated partners, individuals, or family groups forage mostly 0-2 m above ground, usually alone, but sometimes briefly joining mixed-species flocks of other insectivores. Forages mostly in shaded situations above or near water, but throughout year also well away from standing water in shaded interior of seasonally flooded savanna woodland and gallery forest. Progresses by short hops, wing-assisted hops, and fluttery flights, separated by frequent pauses of a few seconds to scan for prey; flicks wings constantly, and holds tail partially fanned and cocked at 10 degrees above horizontal, frequently flicking it upwards to 30-45 degrees. Foraging behaviour varies with micro-habitat. Along small streams and edges of oxbow lakes, where banks not steep and many dead branches and vine tangles overhang or protrude from water, hops from one branch to another within tangles at water's edge, leaning forward to pick items from debris stuck to branches at waterline; sometimes clings laterally (with lower leg extended, upper one flexed) to slender vertical stems a few centimetres above water, and reaches with the neck to spear prey from surface; also regularly perches on exposed roots, horizontal branches or hanging vines along streambanks and makes steep diagonal sallies of up to 1.5 m to take prey (probably Amphibicorizae and other water-bugs) from water surface in manner of a small kingfisher (Alcedinidae), sallies sometimes carried through to another perch, at other times on looping course with the bird returning to original perch; individuals observed to make repeated sallies (8-12) from a single spot. Away from water, hitches up slender vertical stems or hanging vines, usually without changing orientation, and hops along fallen trunks, through fallen branches and along woody lianas, perch-gleaning prey from tops and bottoms of live leaves and from stem, vine and branch surfaces by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; also regularly sallies up to 1 m or makes shorter vertical jump-gleans to foliage, branches or woody vines; regularly clings to a perch with its feet while making repeated quick stabs to pluck insects from spider webs; also spends much time in hopping on ground, or jumping back and forth from ground to low perches to seize prey from surface of leaf litter; rarely flips leaves, even when on ground for up to 20 seconds. Occasionally follows army ants, seldom for extended periods, and almost always a subordinate species relegated to periphery of swarm.

**Breeding.** Nests found in Mar-Apr in French Guiana; recently fledged young observed in Jul in Peru (Loreto). Nest a suspended pouch 14-19 cm deep, c. 7 cm wide, constructed from fine black fibres (roots of pteridophytes) loosely woven, with long fibres (average length 0.55 m) hung from bottom, entrance hole c. 5 × 3.5 cm, near top and slanted (eggs not visible from outside), structure typically slung under branch or branches that form a kind of roof, supports including end of horizontal dead branch, epiphyte roots plunging from riparian canopy into the water, sprouts on tree trunk fallen horizontally into water, and extremities of oblique or horizontal leafy branches issuing from trees along bank. Clutch 2 eggs, rather dark cream, sometimes lightly tinged rose, with abundant violaceous or sometimes almost black spots and marbling, most intense (practically solid) on larger end, 14.1-15.2 × 17.8-19.6 mm.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout its range. Range encompasses several large protected areas, e.g. Yapacana, La Neblina and Duida National Parks and Alto Orinoco-Casiquiare Biosphere Reserve, in Venezuela, and Jaú National Park and Rio Negro State Park, in Brazil; also vast areas of intact, suitable habitat which, although not formally protected, appear to be at little risk of being developed in near future.

**Bibliography.** Boesman (1995), Cory & Hellmayr (1924), Haffer (1987), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Parker (2003a), Reynaud (1998), Ridgely & Tudor (1994), Schubart *et al.* (1965), Sharpe *et al.* (2001), Sick (1993), Stotz *et al.* (1996), Tostain & Bournigault (1984), Tostain *et al.* (1992), Zimmer, J.T. (1932c), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997).

### 160. Band-tailed Antbird

#### *Hypocnemoides maculicauda*

French: Alapi à menton noir

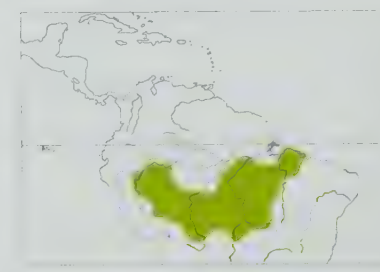
Spanish: Horniguero Colibandeado

German: Südlicher Graumeisenschnäpper

**Taxonomy.** *Hypocnemis maculicauda* Pelzel, 1868, Cáceres, Engenho do Capitão Gama and Mato Grosso, south-west Mato Grosso, Brazil.

Closely related to *H. melanopogon*, appearing to differ somewhat in vocalizations, but very similar in behaviour and morphology; molecular analyses and field studies in regions of apparent parapatry needed in order to establish true taxonomic relationships. Birds from C & E parts of range described as race *orientalis* (initially believed, incorrectly, to represent disjunct population), but geographical limits not definable; considered inseparable, pending further study. Monotypic.

**Distribution.** E Peru (S of R Amazon and R Marañón), S Amazonian Brazil (S Amazonas and Acre E to C & E Pará and EC Maranhão, S to Rondônia and S Mato Grosso) and N Bolivia (S to W Santa Cruz).



**Descriptive notes.** 11-12 cm; 11.5-14.5 g (E birds apparently heavier). Male has crown dark grey, rest of head and upperparts slightly paler, white interscapular patch; wings and tail blackish-grey, wing-coverts tipped white, tail broadly tipped white; throat black, underparts grey, belly palest, underwing-coverts light grey; E populations ("*orientalis*") tend to be larger and paler. Distinguished from similar *H. melanopogon* by slightly smaller size, white interscapular patch, broader terminal tailband (4-5 mm). Female is paler than male above, especially on crown, throat white, mottled light grey, grey below, belly centre and crissum

patchily white, underwing-coverts whitish. **VOICE.** Loudsong a long series (e.g. 26 notes, 4-8 seconds) of ascending clear notes that gain in intensity initially and, after reaching peak, descend in pitch into raspy notes. Calls include sharp "chak", often in doublets and in brief series, and longer downslurred "teeer", sometimes raspy.

**Habitat.** Understorey of seasonally flooded evergreen forest (*várzea*, *igapó*) and gallery forest, to 500 m. Particularly along margins of sluggish rivers, oxbow lakes, streams, and in flooded forest; wherever abundant overhanging woody vine tangles and partially submerged branches provide perches within reach of the water. In SE Peru, numbers increase dramatically around edges of oxbow lakes during Jul-Oct dry season, when many forest streams and swamps dry up.

**Food and Feeding.** Little published. Feeds on variety of insects, probably also spiders. Prey identified from stomach samples (Brazil) include beetles (Coleoptera), hymenopterans (Chrysidae, Formicidae,



Vespoidea, hemipterans, and lepidopteran larvae. Appears to be, at least in most respects, the ecological counterpart of *H. melanopogon*. Closely associated pair-members, individuals, or family groups forage mostly 0-3 m above ground, sometimes to 4 m; usually alone, but sometimes briefly joining mixed-species flocks of other insectivores. Forages mostly above or very near water, but at all times also in shaded interior of seasonally flooded gallery forest, sometimes well away from standing water. Progresses by short hops, wing-assisted hops and fluttery flights, with frequent pauses of a few seconds to scan for prey; flicks wings constantly, and holds tail partially fanned and cocked at 10 degrees above horizontal, frequently flicks tail upwards to 30-45 degrees. Behaviour varies with micro-habitat used. Along small streams and lake edges, where banks not steep and many dead branches and vine tangles overhang or protrude from water, hops from branch to branch within tangles, leaning forward to pick prey from material adhering to branches at waterline; sometimes clings laterally, lower leg extended, upper leg flexed, to slender vertical stems a few centimetres above water, and reaches with the neck to spear prey at surface; also regularly perches on exposed roots, horizontal branches or hanging vines along streambanks and makes repeated steep diagonal sallies of 0-3-1 m to take prey (probably Amphibicorizae and other water-bugs) from surface in manner of American Pygmy-kingfisher (*Chloroceryle aenea*), sometimes continuing to another perch, at other times looping around to return to original perch. Away from water, tends to forage higher, but also near or on ground, hopping along fallen trunks and through fallen branches, probing in roots and vines around bases of trees, hopping on ground or jumping back and forth to seize prey from surface of leaf litter; sometimes makes darting sallies from perch to ground; when higher off ground, hitches up slender vertical stems or hanging vines, usually without changing orientation, and hops through tops of small palms, perch-gleaning prey from tops and bottoms of live leaves and from stem, vine and branch surfaces by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; also regularly makes short (less than 30 cm) hover-gleans to undersides of overhanging leaves; regularly clings to perch with its feet and makes repeated quick stabs to pluck insects from spider webs. Occasionally follows army ants (*Eciton burchelli*) that move through its habitat, though seldom for extended periods; almost always a subordinate species relegated to periphery of swarm, and dominated at swarms in Brazil by *Pyrgilena leuconota* and White-chinned Woodcreeper (*Dendrocincla merula*).

**Breeding.** Almost nothing known. Adults seen feeding stub-tailed juveniles in Aug in Brazil (lower R Javari).

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout its range. Regions in which it occurs include a number of large protected areas, e.g. Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, and Serra do Divisor, Tapajós, Pácaas Novos and Araguaia National Parks and Cristalino State Park, in Brazil. Range also encompasses vast expanses of suitable habitat, e.g. Bolivian and Brazilian Pantanal, which are not formally protected, but seem to be at little risk of being developed in the near term.

**Bibliography.** Cory & Hellmayr (1924), Cox *et al.* (1992), Foster *et al.* (1994), Hafler (1987), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Killen & Schulenberg (1998), Novaes (1970), O'Neill & Pearson (1974), Oren & Parker (1997), Parker (1982), Remsen & Parker (1983), Remsen *et al.* (1986), Ridgely & Tudor (1994), Robinson (1997), Robinson & Terborgh (1997), Schubart *et al.* (1965), Servat (1996), Sick (1955, 1993), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Whitney (2003b), Willis (1984b), Zimmer, J.L. (1932c), Zimmer, K.J. (2003a), Zimmer, K.J., Parker *et al.* (1997).

Genus MYRMOCHANES J. A. Allen, 1889

161. Black-and-white Antbird

*Myrmochanes hemileucus*

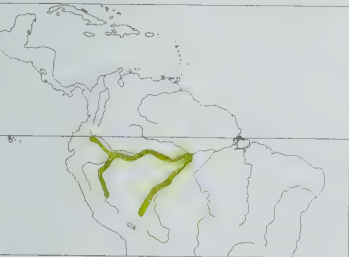
French: Alapi noir et blanc

Spanish: Hormiguero Negriblanco

German: Schwarzweißer Ameisenschnäpper

**Taxonomy.** *Hypocnemis hemileuca* P. L. Sclater and Salvin, 1866, lower Ucayali, Peru. Relationships uncertain. Monotypic.

**Distribution.** Along main rivers and their major white-water tributaries in NE Ecuador (R Napo), Peru (R Napo, R Ucayali), W Brazil (R Solimões, R Madeira) and N Bolivia (R Beni).



**Descriptive notes.** 10-11 cm; 12-13 g. Male has crown, head side, upperparts, wings and graduated tail black, hint of white loreal spot, wide white interscapular patch extending to under scapulars, outer scapulars edged white, wing-coverts and tail tipped white; throat and underparts white, black spotting on sides. Female differs from male in having obvious white streak in loreal region, smaller wing-covert tips, flanks tinged buff. **VOICE.** Presumed loudsong a short, variable, slightly accelerating series (e.g. 8-11 notes, 0.5-0.7 seconds) of abrupt, dry notes, often decreasing in intensity, sometimes flat, sometimes dropping in pitch, resembling a rat-

tle. Calls include short, low-pitched "chuck", and scolding series of squeals (e.g. 9 notes, 0.9 seconds) decelerating slightly and decreasing in intensity.

**Habitat.** Understorey of early and middle-stage successional growth, primarily *Tessaria* scrub and *Cecropia* groves, on river islands; to 300 m.

**Food and Feeding.** Little published. Feeds on insects, including lepidopteran larvae, hemipterans, orthopterans and beetles; probably also on spiders. Closely associated partners, individuals, or family groups forage mostly 0-1-4 m above ground, occasionally to 8 m, usually apart from other species. Mostly in vine-matted understorey of *Cecropia* woodland, where vine tangles and broad-leaved creepers (particularly *Ippomoea*) form more or less continuous ground cover to heights of 0-6 m, and where they overtop crowns of shrubs and form "cones" at base of each tree; also in dense stands of *Tessaria* scrub, *Gynierum* cane, and rank grass. Very active; progresses by short hops, seldom pauses for more than 1 second, scans as it moves, flicks wings constantly; tends to work a particular vine tangle or clump of vegetation thoroughly before moving on to another, often zigzagging back and forth and retracing its routes several times; forages mostly within vine tangles, ducking in and out of foliage, sometimes following creepers up *Cecropia* trunks into mid-storey. Perch-gleans most prey from tops and bottoms of live leaves, vines (both herbaceous and

woody), stems, grass blades and branches, by reaching up, out or down (usually while clinging, and noticeably extending its legs and neck) with quick stabs and highly audible mandible snaps, or by short, horizontal lunges; when reaching down, often hangs momentarily before fluttering to another perch. Items also frequently secured by sallies or jump-gleans (10-15% of attack manoeuvres, but as much as 50% in some observed individual foraging bouts), again usually with highly audible snaps of mandibles; sallies usually 15-60 cm, with looping, shallowly U-shaped flightpath, mostly to undersides of leaves, and very abrupt in character, almost recalling a manakin (e.g. *Pipra* or *Manacus*); jump-gleans nearly vertical, and almost always to undersides of leaves, vine stems or branches. Estimated 60% of all attack manoeuvres directed to undersides of leaves, with remaining 40% nearly evenly divided between tops of live leaves and surfaces of vines, stems and grass blades.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common in appropriate habitat throughout its range. With its linear and somewhat fragmented distribution, and its restriction to successional habitats on river islands, this species is, however, vulnerable to habitat perturbation. Most obligate river-island birds have probably a relatively small population, and, because of the dynamic nature of their habitats, the continued existence of such species is dependent on perpetual formation of new islands. Few existing reserves or parks include extensive river-island habitats within their boundaries. Any changes in water flow in R Amazon and its major tributaries, as could be caused by damming, or by increased flooding and erosion resulting from deforestation, could place this species and many other river-island specialists at risk.

**Bibliography.** Cory & Hellmayr (1924), Hilty & Brown (1986), Isler & Whitney (2002), Parker (2003a), Remsen & Parker (1983), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rosenberg, G.H. (1985, 1990), Russell & Lamm (1978), Sick (1993), Stotz *et al.* (1996), Zimmer, J.T. (1932c), Zimmer, K.J. (2003a).

Genus GYMNOCHILA P. L. Sclater, 1858

162. Bare-crowned Antbird

*Gymnocyhla nudiceps*

French: Alapi à tête nue

German: Nacktstirn-Ameisenvogel

Spanish: Hormiguero Calvo

**Taxonomy.** *Myiothera nudiceps* Cassin, 1850, Ciudad de Panamá, Panama.

Relationships uncertain; traditionally placed in present location in taxonomic sequence, but perhaps related to large *Myrmeciza* species (e.g. *M. hyperythra*); study required. Some races may prove to reflect no more than clinal variation. Four subspecies recognized.

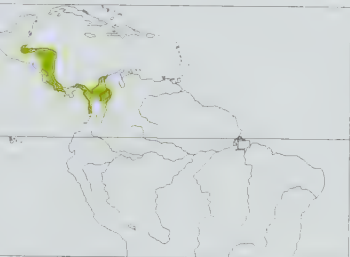
**Subspecies and Distribution.**

*G. n. chiroleuca* P. L. Sclater & Salvin, 1869 - Caribbean slope from S Belize, Guatemala and Honduras to W Panama (Bocas del Toro); recently reported from extreme SE Mexico (Yachchilán).

*G. n. erratilis* Bangs, 1907 - Pacific slope of Costa Rica (Puntarenas, San José) and W Panama (Chiriquí).

*G. n. nudiceps* (Cassin, 1850) - E Panama (E from Coclé and Panamá) and Pacific slope in NW Colombia (Chocó, Valle del Cauca).

*G. n. sanctamartae* Ridgway, 1908 - N Colombia (Córdoba and N Antioquia E to Magdalena and S César, also extreme E La Guajira).



**Descriptive notes.** 15-16 cm; 28-33 g. Male nominate race is black, except forehead, forecrown, lores and ocular region unfeathered, skin bright blue; small white interscapular patch (sometimes lacking); wing-coverts tipped white, alula and outer primary edged white, tail narrowly tipped white; underwing-coverts black, narrowly edged white. Female is dark yellowish-brown above, unfeathered lores and ocular region bright blue, interscapular patch white, wings and tail darker and redder than upperparts, flight-feathers and wing-coverts edged light cinnamon-rufous, tail tipped white; throat and underparts cinnamon-rufous, deeper on breast, browner on flanks, underwing-coverts light cinnamon-rufous.

Subadult male is like adult male, but forehead and forecrown feathered, wings brownish-black, wing-coverts lack white tips. Race *chiroleuca* has wing-covert tips broader, female upperparts olive-brown, crown darker, interscapular patch reduced or absent; *erratilis* differs from previous in narrower wing-covert tips, female upperparts bright cinnamon-brown; *sanctamartae* is palest, male covert tips broader than nominate, white underwing-covert edgings broader. **VOICE.** Loudsong a countable, variable-length series (e.g. 11 notes, 3-5 seconds) of ringing downslurred notes, typically on same pitch, first 2 notes usually closer together than immediately following ones, accelerating slightly towards end, typically gains in intensity at beginning, drops at end; female similar, started in middle of male loudsong. Calls include a short note like note of song, a longer (e.g. 0-1.7 seconds) rising and falling note (may be clear or modulated), and trill-like bubbling rattle that often drops initially in pitch and intensity.

**Habitat.** Understorey of lowland and foothill evergreen-forest borders, adjacent tall second growth, and regenerating clearings and orchards; mostly below 650 m, locally to 1200 m. Occupies dense, humid thickets of rank herbaceous growth (particularly with abundant large-leaved genera such as *Heliconia* and *Calathea*), often in swampy, poorly drained areas and along stagnant streams. Also in large forest light-gaps regenerating with masses of viny tangles, and in old overgrown guava and cacao plantations.

**Food and Feeding.** Little published. Feeds on variety of insects and spiders, probably also other arthropods; also small reptiles. Recorded prey include cockroaches (Blattoidea), beetles (Coleoptera), heteropterans, orthopterans, and spiders (Araneae); from Panama, ants (Formicidae), grasshoppers (Acrididae), earwigs (Dermaptera), and a small lizard. Closely associated pair-members, individuals, or family groups forage mostly 0-2-5 m above ground; usually not associated with other species except at army-ant swarms. Remains mostly near ground in dense cover, where hard to observe. Forages deliberately; moves by short hops, separated by pauses of 1-5 seconds to scan for prey; regularly pounds tail downwards emphatically, then slowly raises it to just above horizontal before pounding it down again. Perch-gleans most prey from tops and bottoms of live (mostly large) leaves, stems and vines, by reaching up, out or down or by short horizontal



lunge; sometimes jump-gleans prey from underside of overhanging vegetation. Regularly follows army ants (mostly *Eciton burchelli*) in pursuit of flushed prey (behaviour recorded in Costa Rica, Panama and Colombia); less adept at clinging laterally to vertical stems than are most other "professional" ant-following thamnophilids (e.g. *Gymnophis*), and seldom waits for ants to flush prey, but instead hops constantly, looking for and seizing prey from the ground or from low vines, sometimes sallying to ground or trunks; apparently subordinate to *Phaenostictus mcleannani* at ant swarms.

**Breeding.** Little known. Nest found in Apr in Costa Rica (details previously unpublished): domed, constructed from finely woven twigs on inside, covered with dead leaves and strips of palm fronds around top and sides, entrance hole taller than it was wide, placed c. 1.2 m above ground in top-centre of broken-off understorey palm (built where fronds join trunk and surrounded by trapped leaf litter, so that nest appeared to be part of litter); contained 2 eggs, white with brown blotches; male incubating, flushed from nest in late morning.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Generally uncommon to locally fairly common throughout most of its range; particular centres of abundance include the Rio Frio and Lago Arenal regions of N Costa Rica, and the Darién lowlands of E Panama (part of which lie within Darién National Park). Probably declining with increasing deforestation. Although this is primarily a bird of second-growth habitats, the widespread conversion of native forest to cattle pasture and intensive agricultural production, especially oil palms (*Elaeis guineensis*), pineapple and bananas in lowlands and coffee in foothills, is not conducive to sparing or creating the kinds of mature second growth that this species requires.

**Bibliography.** Anon (1998a), Blake & Loiselle (1991, 2001), Cody (2000), Cory & Hellmayr (1924), Dugand (1947), Haffer (1975), Hilty & Brown (1986), Howell, S.N.G. & Webb (1995a), Howell, S.N.G. *et al.* (1992), Howell, F.R. (1957), Isler & Whitney (2002), Monroe (1968), Richmond (1893), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Slud (1960, 1964), Stiles & Skutch (1989), Stotz *et al.* (1996), Wetmore (1972), Willis (1985b), Willis & Oniki (1978), Zimmer (2003a, 2003b).

## Genus *SCLATERIA* Oberholser, 1899

### 163. Silvered Antbird

#### *Sclateria naevia*

French: Alapi paludicole

Spanish: Hormiguero Plateado

German: Silbergrauer Ameisenschnäpper

**Taxonomy.** *Sitta naevia* J. F. Gmelin, 1788, Surinam.

Relationships uncertain. Nominate race and *argentata* differ distinctively, but intervening races *diaphora* and *toddi* may represent clinal variation; research needed. Four subspecies recognized.

**Subspecies and Distribution.**

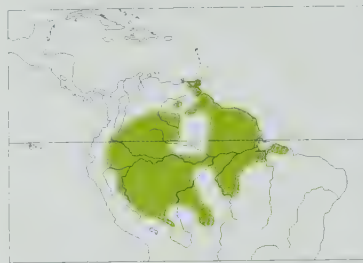
*S. n. naevia* (J. F. Gmelin, 1788) - E Venezuela (E Sucre S to Delta Amacuro and E & S Bolívar), Trinidad, the Guianas, and NE Amazonian Brazil (lower R Negro E to Amapá and, S of R Amazon, S of R Tocantins to W Maranhão).

*S. n. diaphora* Todd, 1913 - SC Venezuela (lower R Caura drainage, in NW Bolívar).

*S. n. toddi* Hellmayr, 1924 - SC Amazonian Brazil (from lower R Madeira and both banks of R Teles Pires I to R Tocantins).

*S. n. argentata* (Des Murs, 1856) - SW Venezuela (W & S Amazonas), SE Colombia (S from Meta and Vichada), E Ecuador, E Peru, W Amazonian Brazil (E to R Madeira, Rondônia and SW Mato Grosso) and NW & E Bolivia (Pando, La Paz, W Beni, Cochabamba, extreme NE Santa Cruz).

**Descriptive notes.** 14-16 cm; 21-27 g. Long, slender bill. Male nominate race has crown and upperparts dark grey, short supercilium grey, wings and tail blackish-grey, wing-coverts tipped white; underparts white, scalloped grey, whitest on throat; flanks, crissum and underwing-coverts grey. Female is like male, but grey replaced by greyish-brown, wing-covert spots cinnamon-buff. Subadult male resembles female. Race *argentata* male is white below, breast and flanks faintly mottled light grey, paler grey crissum, female like nominate but greyer above, underparts varying from white with buffy brown sides and posterior region to deep buff with browner sides and vent; *toddi* is



intermediate between nominate and previous; *diaphora* male has wing-covert spots reduced to small dots, grey underparts with few narrow white streaks on breast, female underparts ochraceous tawny with little or no mottling. Voice. Loudsong a long rapid trill (e.g. 40 notes, 4-8 seconds) of abrupt notes, introduced by more emphatic and higher note than immediately following ones, latter building in intensity and rising in pitch, then dropping off steeply at end. Calls include abrupt "pit" notes, usually irregularly in sputtering series, sometimes speeding up into uneven rattle, or simply given in even rattle; also long (e.g. 0-6

seconds) downslurred whistle, sometimes interspersed among the "pit" notes, sometimes given responsively by pair-members.

**Habitat.** Understorey and floor of flooded tropical evergreen forest (both *várzea* and *igapó*), particularly along immediate edges of rivers and oxbow lakes, but also in thickets along sluggish forest streams in *terra firme* forest; mostly below 500 m, locally to 700 m in Guianan highlands. Often found in same places as *Hypocnemoides*, e.g. riverbanks and lagoon edges with abundant overhanging woody vine tangles and numerous partially submerged branches offering perches just above the water; also in swampy, poorly drained areas within forest, especially where these border streams. Locally in mangrove swamps, e.g. in Trinidad and Surinam, and moriche palm (*Mauritia flexuosa*) swamps, e.g. in E Ecuador lowlands.

**Food and Feeding.** Little published. Feeds on various insects and arachnids. Recorded prey in Brazil includes hemipterans, homopterans (Cicadellidae), beetles (Carabidae), damselflies (Coenagrionidae), spiders; in Surinam grasshoppers (Acrididae), cockroaches (Blattidae), hemipterans, homopterans, scolytid beetles, spiders, scorpions (Scorpionidae). Closely associated partners, individuals, or family groups forage mostly 0-1 m above ground, usually not associated with other bird species. Mostly in damp leaf litter at muddy margins of sluggish streams and oxbow lakes; also clambers around aerial roots (particularly in mangroves) and lianas at water's edge, and in shrubs and fallen trees with their bases partially submerged; less commonly in live shrubs lining water-courses. Deliberate forager; progresses by short hops, with frequent pauses of up to 10 seconds or more to scan for prey, typically by looking downwards; tail regularly flicked from side to side in jerky manner, and fanned excitedly when mass of insects uncovered. Perch-gleans most prey from leaf litter, from branch or root surfaces, or from on or near water surface, by reaching mostly down or out (less frequently up) typically with quick stabs of its long bill (often while clinging by its feet to partially submerged horizontal or inclined perches a few centimetres above water), or by short, horizontal lunges; only occasionally pounces to the ground from overhanging perches, or sallies to overhead leaves. Rarely follows army-ant swarms, which seldom occur in partially flooded zones where this species spends most of its time; records of individuals in Brazil briefly following swarms of *Eciton burchelli* near Belém (Pará) and along R Javari (Amazonas).

**Breeding.** Little known. Record of parents attending newly fledged young in Aug in Surinam, and similar record in Aug from Belém (near Belém). Nest undescribed. Normal clutch 2 eggs, bluish-white with many red-brown spots and small blotches over entire shell (additional egg descriptions from Trinidad, Venezuela, Guyana, Brazil).

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of its extensive range. Numerous reserves and parks exist in virtually every region in which it occurs; range also encompasses extensive areas of suitable habitat which are not formally protected, but appear to be at little risk of development in near future.

**Bibliography.** Álvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Chapman (1894), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), French (1991), Foster *et al.* (1994), Haverschmidt (1965, 1977), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Junge & Mees (1958), Killen & Schulten (1998), Kreuger (1968), O'Neill (1974), O'Neill & Pearson (1974), Oniki (1972a), Oniki & Willis (1983b), Oren & Parker (1997), Parker & Bailey (1991), Remsen (1986), Remsen & Parker (1983), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson (1997), Robinson & Terborgh (1997), Schönwetter & Meise (1967), Schubart *et al.* (1965), Servat (1996), Sick (1993), Sneath (1913), Snyder (1966), Stotz & Bierregaard (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Tallman & Tallman (1994), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Tostain (1986a), Tostain *et al.* (1992), Willis (1985b), Young (1929), Zimmer, J.T. (1931b), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997).











# Genus *PERCNOSTOLA* Cabanis & Heine, 1859

## 164. Black-headed Antbird

### *Pernostola rufifrons*

**French:** Alapi à tête noir

**Spanish:** Hormiguero Cabecinegro

**German:** Schwarzscheitel-Ameisenvogel

**Taxonomy.** *Turdus rufifrons* J. F. Gmelin, 1789, Cayenne, French Guiana.

Forms a superspecies with *P. arenarum*, the two possibly not closely related to other species currently placed in genus. Races appear not to intergrade and are sometimes considered separate species, but field studies in possible contact zones, as well as molecular analyses, required in order to determine extent to which they are isolated and genetically distinct. Four subspecies recognized.

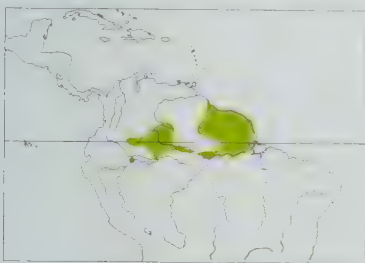
#### Subspecies and Distribution.

*P. r. jensoni* Capparella *et al.*, 1997 - NE Peru (Quebrada Orán, in Loreto).

*P. r. minor* Pelzelin, 1868 - E Colombia (Guainia S to Caquetá), SW Venezuela (SW Amazonas) and NW Amazonian Brazil (upper drainage and S bank of middle R Negro, S to N bank of R Iça).

*P. r. subcristata* Hellmayr, 1908 - lower R Negro E to R Trombetas, in N Brazil.

*P. r. rufifrons* (J. F. Gmelin, 1789) - E & S Guyana, Surinam, French Guiana and NE Amazonian Brazil (NE Roraima, and R Trombetas E to Amapá).



**Descriptive notes.** 13-15.5 cm; 21-32 g. Male nominate race is dark grey, crown, short crest and throat black, wings and tail blackish-grey, wing-coverts tipped white; underwing-coverts grey; iris red. Female has crown black, upperparts, wings and tail greyish olive-brown, flight-feathers thinly edged rufous, wing-coverts black, tipped light cinnamon-rufous; forehead, head side, throat and underparts cinnamon-rufous, flanks and crissum tinged olive, underwing-coverts cinnamon-rufous. Subadult male is like male but with patches of cinnamon-rufous, typically on wings and posterior underparts. Race *subcristata* resembles

nominate, but female crown dark chestnut, edged dark greyish-brown; *minor* is smaller than nominate, tail shorter, iris grey, male no crest, crown feathers edged grey, female crest rufous-brown with dark greyish-brown edges, remiges edged grey-brown, underparts paler with belly centre yellow-ochre, contrasting dark olive flanks; *jensoni* differs from previous in male crown feathers having broader pale edges, female crest black, edged grey, side of head dark olive-grey, paler and more uniform below. **VOICE.** Loudsong a short, countable series (e.g. 8 notes, 2-3 seconds) of strident downslurred whistles at even pitch that become slightly longer as song decelerates; song pace of *jensoni* faster. Calls include short, somewhat screeching note, longer (e.g. 0-35 seconds) complaining, downslurred note, and short rattle.

**Habitat.** Understorey of lowland and foothill evergreen forest and adjacent tall second-growth woodland, mostly below 550 m; locally to 1100 m in tepui region of S Venezuela. Generally in dense thickets, particularly shrubby forest borders and densely vegetated light-gaps (especially around treefalls) within forest interior; often associated with sandy soils, but not restricted to these. Nominate race occurs in savanna forest in the broad sandy coastal plain in Surinam and French Guiana, and in latter country small numbers also in mature mangrove stands; also in more lateritic soils elsewhere in range, including locally in seasonally flooded riverine forest in NE Brazil (near Serra do Navio, in Amapá). Race *subcristata* occurs in forests on both lateritic and sandy soils. In sandy-soil forests (Amazonian *caatinga*) in E Colombia and NW Brazil (*minor*). Requirements in NE Peru (*jensoni*) not well understood, but variety of habitats on different soil types used, including tall forest with dense understorey of "irapay" palms (*Lepidocaryum tenue*) growing on nutrient-poor sandy soil.

**Food and Feeding.** Feeds on variety of insects and other arthropods; occasionally small reptiles flushed by army ants; also occasionally fruit. Recorded prey in Brazil include scorpions (Scorpiones), spiders, centipedes (Chilopoda), cockroaches (Blattodea), crickets (Gryllidae), katydids (Tettigoniidae), beetles (Coleoptera), adult and larval lepidopterans, ant larvae (Formicidae), lizards (7 cm), and a snake; food items in Surinam include damselflies (Zygoptera), cockroaches (of family Blattidae), ants, and pseudoscorpions (Pseudoscorpionidae), as well as berries and fruit; in French Guiana a small lizard. Closely associated partners, individuals, or family groups forage mostly 0-2 m above ground; seldom associates with other bird species except at army-ant swarms. Regularly follows army ants to feed on flushed arthropod prey (ant-following not observed for race *jensoni*), but just as often feeds away from ants. Forages mostly on or very close to ground, usually in dense undergrowth, particularly around treefalls. Deliberate forager; progresses by short hops, with frequent pauses of 1-5 seconds to scan for prey; often hops up to low, slender perches (vertical, inclined or horizontal) to scan, then drops back down to ground to seize prey from leaf litter; regularly pounds tail down emphatically, then slowly raises it to horizontal or slightly higher, before pounding it down again (no information on tail movements for *jensoni*). Away from ants, perch-gleans prey from live leaves (more from undersides), stems, vines and branches, as well as from leaf litter, by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; also makes short sallies to ground, foliage and branches. At ant swarms, forages mostly by sallying rapidly to ground to seize prey, then returning to perch; also hops on ground, tossing leaves with its bill to uncover prey, and sallies up to 1 m to live leaves, stems and branches; when woodcreepers (Dendrocolaptidae), *Gymopithys*, *Phlegopsis* or *Rhegmatorhina* species present, usually forages at periphery of swarm, but wherever swarms pass through treefalls or other dense undergrowth (where larger birds less able to manoeuvre), or in absence of dominant "professional" ant-followers, present species will occupy positions over swarm centre.

**Breeding.** Aug-Mar in French Guiana; in Brazil, nest found in Jun in Pará (nominate), and season Oct-Aug in Amazonas (*subcristata*). Nest of nominate race in Pará was a leafy ball with side entrance, a few centimetres above ground in fallen limbs in open understorey of tall second growth, and one in French Guiana appeared like a "hut" placed in pile of dead leaves at base of spiny palm in undergrowth; nest of *subcristata* in Amazonas was a neat dome with roof and side

entrance (opening large in relation to size of nest), constructed of dead leaves with few palm leaves intermixed, lined on sides with small, thin, dead palm leaves and on bottom with even finer dead leaves (not of palms), placed on forest floor on slight incline with entrance facing downhill. Normal clutch probably 2 eggs, occasionally 1, nominate race (Guyana, Brazil) creamy white, heavily speckled and blotched with dark brown, particularly around larger end; incubation presumably by both sexes (confirmed for male), probably only female at night; chicks brooded and fed by both parents; typically each parent responsible for post-fledging care of one of the two young, fledglings fed for several weeks after leaving nest, projected period of dependence c. 50 days.

**Movements.** None recorded; presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Locally uncommon to fairly common throughout most of range. Substantial populations of race *minor* likely to be present in Jaú National Park, in Brazil, Duida National Park, in Venezuela, and Pico da Neblina National Park, on Brazil-Venezuela border. Nominate race found in numerous parks and reserves in the Guianas, e.g. Brownsberg Nature Park, in Surinam; less formally protected in Brazil, but nonetheless fairly common in regions such as Amapá, where extensive areas of suitable habitat appear to be at little risk of near-term development. Race *subcristata* is fairly common at Ducke Reserve and in some of the BDFFP INPA forests N of Manaus; its range also encompasses large areas of suitable habitat that are in little danger of being developed in near future. Conservation status of recently described and as yet poorly known *jensoni* less certain; known range is very small and, although type series was collected in *terra firme* forest, similar efforts to locate it in six other *terra firme* sites in same region of NE Peru were unsuccessful; this suggests that it is patchily distributed within its small range, placing it at greater potential risk from habitat destruction than are other races. More work is needed to clarify the habitat requirements and distributional limits of *jensoni* before its true status can be assessed.

**Bibliography.** Borges *et al.* (2001), Capparella *et al.* (1997), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Dick *et al.* (1984), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler, M.L., Alvarez *et al.* (2001), Isler, P.R. & Whitney (2002), Krueger (1968), Meyer de Schauensee & Phelps (1978), Novaes (1980), Oniki & Willis (1972, 1982), Reynaud (1998), Ridgely & Tudor (1994), Schönwetter & Meise (1967), Sick (1993), Snyder (1966), Stiles *et al.* (1995), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Stouffer & Bierregaard (1995), Thiollay (1992, 1994), Fostain (1986a, 2003), Tostain *et al.* (1992), Whitaker (2003b), Willis (1977, 1979c, 1982b, 1991), Willis & Oniki (1978), Zimmer, J.T. (1932f), Zimmer, K.J. (2003a).

## 165. Allpahuayo Antbird

### *Pernostola arenarum*

**French:** Alapi du varillal

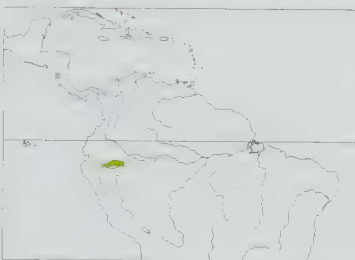
**German:** Einfarb-Ameisenvogel

**Spanish:** Hormiguero del Allpahuayo

**Taxonomy.** *Pernostola arenarum* Isler *et al.*, 2001, Mishana, Loreto, Peru.

Forms a superspecies with *P. rufifrons*, the two possibly not closely related to other species currently placed in genus. Monotypic.

**Distribution.** NE Peru N of R Maraón (from R Morona E to R Nanay drainage).



**Descriptive notes.** 14-15 cm; 22-24 g. Male is dark grey with black throat, wings and tail blackish-grey, wing-coverts tipped white; underwing-coverts grey; iris grey. Differs from *P. rufifrons* in dark grey crown without crest, grey eyes, shorter tail. Female has dark grey crown, head side and upperparts, slightly darker wings and tail, flight-feathers thinly edged paler grey, wing-coverts black, tipped light cinnamon-rufous, centre of throat white, underparts reddish yellow-brown, belly centre white, flanks slightly tinged olive. **VOICE.** Loudsong a rapidly delivered (too fast to count), decelerating series (e.g. 17 notes, 3-3

seconds) of flat-sounding whistles at same pitch. Calls include short whistle sounding upslurred and querulous, also longer (e.g. 0-5 seconds) whistle slightly downslurred but almost flat in pitch, and short rattle.

**Habitat.** Understorey of lowland evergreen forest of type known as "varillal", a very dense and stunted (canopy height below 10 m) *terra firme* forest growing on nearly pure white sandy soil; to 150 m. In all places in which the species has been found, understorey was dominated by saplings of the palm *Euterpe catinga* and by species of the clusiaceous plant *Caraipa* (primarily *C. utilis*); sometimes inhabits varillal containing emergent trees to 20 m or more, but only where dense understorey predominates. Rarely, occurs in taller forest with dense understorey of "irapay" palm (*Lepidocaryum tenue*) growing on nutrient-poor (both weathered clay and sandy) soils.

**Food and Feeding.** Feeds on insects, probably also spiders. Partners, individuals, or family groups forage mostly 0-1 m above ground, and apart from mixed-species flocks. Active forager, progressing by short hops, leaping quickly from one perch to another; unlike most presumed relatives, does not exhibit stereotyped tail movements as it forages. Sallies to the ground to seize prey, then quickly hops back up to a perch; also hops along fallen trees or on ground, and frequently uses bill to toss leaves, revealing prey hidden in litter; does not manipulate leaf litter with feet (e.g. no scratching). Not observed to follow army-ant swarms, although this could in part be due to general scarcity of army ants in the restricted habitat in which this species occurs.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Not described until 2001; merits conservation status of Endangered. Barring its discovery elsewhere, this species would appear to occupy one of the most specialized habitats in the smallest geographical range of any thamnophilid (rivalled in this regard only by *Stymphalornis acutirostris*, discovered in 1995). Region in which it is found is one of exploding human population growth; varillal is heavily exploited for poles for building houses, and the leaves of irapay palm are extensively harvested for thatching of roofs. Complicating the threat, the species has been found only in some varillales and irapayales, despite intensive ornithological surveys in the Tigre and Nanay river basins. Critical to its conservation is the recent establishment of Allpahuayo-Mishana Reserved Zone, which includes much of this thamnophilid's known range and also harbours other species (e.g. *Herpsilochmus genryi*) primarily restricted to sandy-soil habitats in this part of Amazon Basin; continued protection of this important reserve is



vital to the species' long-term survival. Further surveys to locate any additional populations, followed by steps to protect them, are also needed.

**Bibliography** Anon (2002b, 2002c, 2002d). Isler, M.L., Alvarez *et al.* (2001), Isler, P.R. & Whitney (2002), Sangster (2002)

## 166. Slate-coloured Antbird

### *Pernostola schistacea*

**French:** Alapi ardoisé

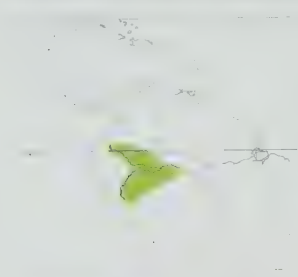
**Spanish:** Hormiguero Pizarroso

**German:** Schwarzschnabel-Ameisenvogel

**Taxonomy** *Hypocnemis schistacea* P. L. Selater, 1858, Rio Yavari, Loreto, Peru.

Closest to *P. leucostigma* and *P. caurensis*, and sometimes placed with them in separate genus *Schistocichla* Monotypic.

**Distribution** S Colombia (Putumayo, S Caquetá, Amazonas), NE Ecuador (Sucumbios), E Peru (I: Loreto, Ucayali) and WC Amazonian Brazil (WC Amazonas, extreme W Acre).



**Descriptive notes.** 13.5-14.5 cm. Male is dark bluish-grey, wings and tail blackish-grey, wing coverts dotted white at tips; underwing-coverts grey. Female has crown dark rufous-chestnut, upperparts rufous-brown, becoming more olive on rump, pale shaft streaks on crown and back; wings dark brown, tertial edges and wing-covert tips pale cinnamon, tail brownish-black; head side, throat and underparts bright rufous, brownish-grey on flanks and crissum; underwing-coverts brownish-grey. **VOICE.** Loudsong a short, countable series (e.g. 6 notes, 2-5 seconds) in which notes become more intense and rise slightly in pitch

but shorten throughout, while intervals between them remain constant. Calls include unclear "chick" notes in pairs or in short (e.g. 1-2 seconds) twittering series; also long (e.g. 0-5 seconds) downslurred whistle

**Habitat** Understorey and floor of lowland evergreen forest, to 400 m. Appears to be restricted to *terra firme* forest; observed to forage around dry streambeds and in forests with many low palms, but micro-habitat associations not well understood.

**Food and Feeding** Little published. Feeds on various insects, including orthopterans and lepidopterans; probably also on spiders and other arthropods. Partners, individuals, or family groups typically forage on the ground or within 0-4 m of it, less often to 2 m; usually apart from mixed-species flocks. Forages mostly by hopping on ground or on fallen logs and branches; regularly hops up to low perches (e.g. slender stalks, vines, ferns, branches) for a few seconds before dropping back down; stops frequently to look up and around, such stops accompanied by quick upward flick of the tail to above horizontal, tail then dropped slowly to 30 degrees below horizontal and finally jerked up, before hopping again. Flicks dead leaves on the ground to expose prey, probes dead leaves trapped at bases of low palms and ferns; reaches up to snatch prey from under green leaves, sometimes making short, jumping sallies to undersides of overhanging leaves, vines or branches. Not observed to follow army ants.

**Breeding** Nothing known.

**Movements** Presumed resident.

**Status and Conservation.** Not globally threatened. Generally uncommon. Range includes few formally protected areas, e.g. Cuyabeno Reserve, in Ecuador, and Pacaya-Samiria National Reserve, in Peru. Seemingly somewhat patchily distributed, but not well known. Appears to abandon heavily logged areas and not to colonize second growth. Habitat in the region where this species occurs is relatively intact, but virtually all of E Ecuadorian lowlands have been opened up to oil exploration and extraction, and this, combined with ever-increasing human settlement, could eventually place this thamnophilid at risk.

**Bibliography** Cory & Hellmayr (1924), Hellmayr (1929b), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Johns (1991), Parker (2003a), Peres & Whittaker (1991), Rensen & Parker (1984), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Sick (1993), Stotz *et al.* (1996), Willis (1988b), Zimmer, J.J. (1931a), Zimmer, K.J. (2003a)

## 167. Spot-winged Antbird

### *Pernostola leucostigma*

**French:** Alapi ponctué

**German:** Kleiner Grauameisenvogel

**Spanish:** Hormiguero Alimoteado

**Taxonomy** *Pernostola leucostigma* Pelzel, 1868, Manaus, Amazonas, Brazil.

Closest to *P. schistacea* and *P. caurensis*, and sometimes placed with them in separate genus *Schistocichla*. Some races appear to represent full species, although others may involve only clinal variation; taxonomic study currently being undertaken. Racial identity of birds from W Brazil (extreme SW Amazonas and W Acre) uncertain, tentatively assigned to *subplumbea*; E Colombia population probably belongs with *infuscat*, but further study needed. Nine subspecies currently recognized

**Subspecies and Distribution.**

*P. l. saturata* (Salvin, 1885) - vicinity of Mt Roraima, in extreme SE Venezuela and WC Guyana.  
*P. l. obscura* (J. T. Zimmer & Phelps, Sr., 1946) - SE Venezuela (tepui of E Bolívar except Mt Roraima) and adjacent Brazil (extreme N Roraima).

*P. l. leucostigma* Pelzel, 1868 - E Venezuela (extreme E Bolívar), the Guianas and NE Amazonian Brazil (E from R Branco and R Negro to Amapá).

*P. l. infuscat* (Todd, 1927) - S Venezuela (SW Amazonas), E Colombia (Guania, Vaupés, Amazonas) and NW Amazonian Brazil (upper R Negro drainage S to R Solimões).

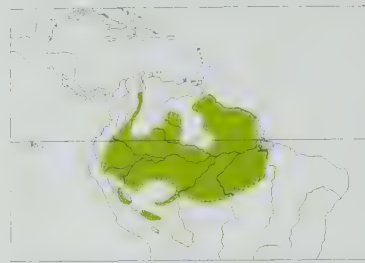
*P. l. subplumbea* (P. L. Selater & Salvin, 1880) - extreme W Venezuela (Táchira) and along E base of Andes in Colombia S to NE Peru (S to N Ucayali), also W Brazil (extreme SW Amazonas, extreme W Acre)

*P. l. intensa* (J. T. Zimmer, 1927) - C Peru (Huánuco, Pasco, Junín, S Ucayali).

*P. l. brunneiceps* (J. T. Zimmer, 1931) - S Peru (Cuzco, W Madre de Dios, Puno) and extreme WC Bolivia (WC La Paz).

*P. l. humaythae* (Hellmayr, 1907) - SW & C Amazonian Brazil (lower R Japurá E to lower R Negro and S of R Amazon, E to R Madeira) and extreme N Bolivia (Pando).

*P. l. rufifacies* (Hellmayr, 1929) - Brazil (F of R Madeira, F to Pará (W of R Tocantins) and S to N Rondônia and extreme N Mato Grosso).



**Descriptive notes.** 14-16 cm; 20-26 g. Male nominate race is rather dark grey above; wings and tail blackish-grey, wing-coverts broadly tipped white; head side, throat and underparts light grey to grey, darker on sides and posteriorly; underwing-coverts grey; legs pinkish. Female has crown dark grey, upperparts dark cinnamon-brown, wings and tail blackish-brown, wing-covert tips pale cinnamon-rufous; side of head grey, throat and underparts tawny, paler on throat and belly, becoming olive-brown on flanks and crissum; underwing-coverts light tawny. Juvenile apparently resembles female; subadult male re-

sembles female or male (appears to vary among races). Races vary mainly in plumage darkness and coloration, size of wing-covert spots, leg colour: *subplumbea* male is darker below than nominate (little contrast with upperparts), white wing-covert tips smaller, legs bluish-grey, female throat and underparts rufous-brown; *intensa* is similar to previous but darker, female with blackish crown contrasting with deep brown upperparts; *brunneiceps* is slightly less dark than last, female crown and side of head brownish-olive; *infuscat* has legs bluish-grey or pinkish, male has wing-covert spots small, female has side of head brownish-olive; *obscura* is much darker in both sexes, male coloration approaching black, legs bluish-grey; *saturata* differs from previous in somewhat less dark coloration, female more rufescent; *humaythae* male is paler, crown and upperparts tinged olive-brown, female head brown; *rufifacies* resembles previous, but male crown grey, underparts slightly darker, tinged olive-brown on sides, flanks and crissum, female crown more grey-brown, head side more rufous, underparts paler and more evenly coloured. **VOICE.** Loudsong nominate race a long rapid trill (e.g. 40 notes, 4-8 seconds) of musical notes, evenly paced and flat in pitch (or nearly so), sometimes rising very slightly at beginning and slightly falling and decelerating at end; loudsongs of other races vary in pace, change of pace, pitch, and frequency pattern, e.g. *saturata* begins slowly, accelerates throughout, drops sharply in pitch at end, *subplumbea* clearly rises and falls in pitch; *rufifacies* loudsong complex, slow-paced initially but accelerates, before becoming evenly paced during which pitch rises initially, then flat, then drops sharply before flattening out again at end. Calls includes long, downslurred, typically frequency-modulated whistle, abrupt unclear note given singly or in series of 2-5, and short rattle.

**Habitat.** Inhabits understorey and floor of humid, lowland, foothill and montane evergreen forest; mostly occurs below 500 m, but found up to 1850 m in Andes, and up to 1700 m in tepuis of Venezuela. Lowland forms are usually associated with dense understorey vegetation along forest streams (*igarapés* in Brazil) or in low-lying, poorly drained areas inside *terra firme* or transitional forest; occasionally recorded in seasonally flooded forest. In region of tepuis, races *obscura* and *saturata* appear to be associated with steep slopes, and may be less connected to water-related habitats.

**Food and Feeding.** Little information published. Feeds on variety of insects, also arachnids. Recorded prey in Brazil (Pará) include pseudoscorpions (Pseudoscorpiones), hemipterans, orthopterans, adult and larval beetles (Coleoptera), neuropteran larvae, harvestmen (Opiliones), ants (Formicidae). Closely associated pair-members, individuals, or family groups forage mostly 0-1 m above ground, usually apart from mixed-species flocks. Forages mostly on the ground, along rotting logs or from low perches, in dense vegetation (particularly ferns, *Heliconia*, and other broad-leaved herbaceous plants), treefalls and piles of organic debris, usually along forest streams or in swampy depressions within forest. Active but methodical forager; progresses by short hops, mostly on ground, but regularly hopping up to low perches (horizontal, inclined or vertical), where it frequently pauses for 1-3 seconds to scan for prey; often clings laterally (with lower leg extended, upper leg flexed) to slender vertical stems; regularly flicks tail upwards to just above horizontal, then dips it slowly to 30 degrees below horizontal. Perch-gleans prey mostly from undersides of overhanging leaves, or from stems and branches, by reaching or by short (less than 15 cm) jump-gleans; just as commonly from leaf litter and root tangles on floor, by hopping along ground or by hanging "upside-down" from perches just above ground, sometimes by flipping leaves with its bill; sometimes probes curled dead leaves trapped in bases of ferns or shrubs, or on logs; occasionally flutter-chases prey flushed from litter (mostly moths or orthopterans). Regularly follows swarms of army ants in pursuit of flushed arthropods (published records available from Brazil, Ecuador, Venezuela), although not a "professional" follower, and more often seen away from ants; subordinate to obligate ant-following species, and typically relegated to foraging around periphery of swarm; when foraging over ants, usually takes low perches and hops or sallies to the ground to seize prey, then rapidly hops back up to a perch; also sometimes remains on ground between columns of ants, and tosses leaves in order to expose hidden prey.

**Breeding.** Little known. Two nests with young in Apr in Guyana; nest-building observed in Oct at two sites in French Guiana; fledgling seen in Jan in Brazil (near Manaus); season in Ecuador (at Limoncacha) inferred as Mar-Oct on basis of gonadal condition of females, presence of juveniles, and moult patterns. Nest descriptions conflict: in Guyana, described as open cup made of grass, with lining of black fibrous material like horsehair, slung in lateral fork located in open, damp streamside area; in French Guiana, male brought small rootlets to a nest under construction beneath large rotten log crossing a creek inside forest (nest not completed owing to heavy rain and consequent flooding).

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon throughout most of its range, Lanyon includes a number of protected areas, examples of which are La Neblina and Jaú-Sararíama National Parks, Caura Forest Reserve, Imataca Forest Reserve and El Dorado, and Alto Orinoco-Casiquiare Biosphere Reserve, in Venezuela; Yasuni National Park, in Ecuador; and Serra do Divisor, Jaú and Tapajós National Parks, Roraima and Caxiuanã National Forests, and Cristalino State Park, in Brazil. Regions inhabited by species also encompass extensive areas of intact habitat which are not formally protected, but seem unlikely to be threatened by development in the near future. Redefinition of species limits in this complex of taxa could alter the conservation status of some of the more range-restricted forms.

**Bibliography** Alvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodriguez & Moskovits (2001), Barnett *et al.* (2002), Belcher & Smoker (1936), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Haverschmidt & Mees (1994), Hellmayr (1929b), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Mason (1996), Meyer de Schauensee & Phelps (1978), Oniki & Willis (1982), Oren & Parker (1997), Parker (2003a), Parker & Rensen (1987), Rensen (1986), Reynaud (1998), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schubart *et al.* (1965), Sick (1993), Snyder (1966), Stotz & Bierregaard (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer & Bierregaard (1995), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Thiollay (1994), Tostain (2003), Tostain *et al.* (1992), Zimmer, J.T. (1931a), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997).



## 168. Caura Antbird

### *Pernostola caurensis*

**French:** Alapi du Caura **German:** Großer Graumeisenvogel **Spanish:** Hormiguero del Caura

**Taxonomy.** *Scelateria schistacea caurensis* Hellmayr, 1906, Caura River Valley [= Cerro Turagua], Bolívar, Venezuela.

Closest to *P. schistacea* and *P. leucostigma*, and sometimes placed with them in separate genus *Schistochila*. Present species, however, is distinct in external structure and appears to occupy an unusual ecological niche, suggesting relatively ancient divergence. Races poorly differentiated. Two subspecies recognized.

#### Subspecies and Distribution.

*P. c. caurensis* (Hellmayr, 1906) - S Venezuela (W Bolívar, N Amazonas).

*P. c. australis* (J. T. Zimmer & Phelps, Sr., 1947) - S Venezuela (S Amazonas) and immediately adjacent N Brazil.



**Descriptive notes.** 18-19 cm; 39 g. Bill large. Male nominate race is slaty grey, upperparts slightly tinged brown, wing-coverts tipped white; underwing-coverts grey; iris deep red. Female has crown, head side and chin dark grey, centre of feathers paler and tinged brown, upperparts and wings dark reddish yellow-brown, wing-coverts with large cinnamon-rufous tips, tail blackish-grey, underparts deep rufous, browner on flanks and crissum, underwing-coverts brown-tinged grey; iris dark brown. Race *australis* male has crown feathers edged pale, no brown tinge on upperparts, female paler, crown blackish-

brown. **VOICE.** Loudsong a short series (e.g. 11 notes, 4 seconds) of short, buzzy (frequency-modulated) notes, initially flat, then dropping in pitch as intervals between notes shorten; female similar, but notes fewer, song often begun at end of male's. Calls include downslurred buzzy "zhew", sharp "quip", and abbreviated rattle, often repeated after short intervals.

**Habitat.** Understorey and floor of humid evergreen and semi-deciduous forest, to 1500 m. Not well known; most specimens are from slopes of tepuis. In Serranía de la Cerbatana, in Bolívar, occupies semi-deciduous foothill forest (280-400 m) with broken canopy of c. 20 m, fairly open understorey, few trees larger than 30 cm in diameter at breast height, high density of woody vines, and dense stands of low, non-spiny bamboo in light-gaps; outstanding feature is the abundance of large boulders, typically covered with mosses and ferns, with terrestrial bromeliads, cacti, bamboo and small trees growing over their tops.

**Food and Feeding.** Little known. Feeds on various insects, including orthopterans and hemipterans; probably also on spiders. Partners, individuals, or family groups forage mostly on the ground or on large boulders, sometimes several metres above ground, and apart from mixed-species flocks. Active but deliberate forager; progresses by short hops, occasional longer wing-assisted hops, or short abrupt flights, separated by frequent pauses of 1-5 seconds to scan for prey; maintains nearly horizontal posture, with head held higher than plane of body; regularly flicks tail upwards, then slowly wags it downwards in 20-30 degree arc below the body, also sometimes flicks wings shallowly. On the ground, tosses leaves to uncover prey hidden in litter, spending up to 5 minutes in one spot; at least as often creeps about on large boulders, probing in mosses and ferns covering the surface, and rummaging in leaf litter trapped in roots of overtopping trees and vine tangles. Often clings laterally (with lower leg extended, upper leg flexed) to nearly vertical rock faces, creeps in and out of crevices, and often squeezes into small spaces between rock surface and overlying roots and vines, remaining in these "canopied" niches for up to 60 seconds at a time; when foraging on rocks, spends most time in somewhat protected locations, within interior of vine tangles and root masses overtopping the rocks, or beneath ledges and overhangs; frequently hops from a rock up to a low branch or sapling to scan for 1-5 seconds, before dropping back down; deliberately inspects fissures, crevices and gaps, often retracing its routes. Perch-gleans most prey from rock, live-leaf, root and vine surfaces by reaching up, out or down with quick stabs of the bill; sometimes makes short (20-25 cm) sallies upwards to glean from undersides of overhanging leaves or mossy rock faces; also scans and lightly probes curled dead leaves. When foraging in leaf litter, vigorously tosses leaves in the manner of a leaf-tosser (*Scelerurus*); large leaves (many larger than the bird itself) are picked up with the bill and tossed, whereas smaller ones are flipped by the bill being inserted beneath the leaf quickly flicked upwards. Not recorded as following army ants; a female once observed as it hopped around periphery of a large emergent swarm of small winged ants, but not determined whether it was feeding on the ants.

**Breeding.** Virtually nothing known. In Serranía de la Cerbatana (Bolívar), birds paired and territorial in mid-Feb, but general lack of vocalizations suggested low levels of breeding activity during height of dry season (spontaneous vocalization did increase substantially following heavy rain); territory appeared to be c. 150-200 m in diameter, and one sustained territorial conflict between neighbouring pairs recorded.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Tepuis EBA. Locally fairly common; in Serranía de la Cerbatana, 7 pairs located along c. 1.5 km of trail in

1998. This species may have evolved as a rock specialist to occupy restricted niche that is locally abundant in parts of the highly eroded Guianan Shield. Localities where it has been found are in remote regions of Bolívar and Amazonas states, where human populations and development are low. Gold-mining operations represent the primary environmental threat in this region. Surveys should be conducted to allow assessment of population levels, and to determine if the apparent patchy distribution is real or is an artifact of undersampling.

**Bibliography.** Cory & Hellmayr (1924), Hellmayr (1929b), Hilty (2003a), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Ridgely & Tudor (1994), Sick (1993), Willard *et al.* (1991), Zimmer (1999).

## 169. White-lined Antbird

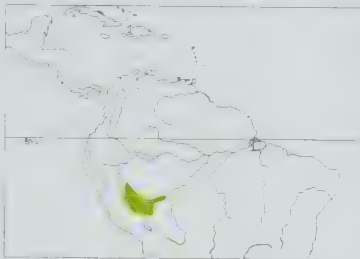
### *Pernostola lophotes*

**French:** Alapi huppé **German:** Schwarzschofpf-Ameisenvogel **Spanish:** Hormiguero Crestado  
**Other common names:** Rufous-crested Antbird (female, when male believed unknown)

**Taxonomy.** *Pernostola lophotes* Hellmayr and Seilern, 1914, Río Sangabán, Puno, Peru.

Relationships uncertain; possibly closest to *P. rufifrons*, or alternatively perhaps not closely related to any other members of genus. Original description of species almost certainly based on a subadult male, having female-like plumage; adult male described much later, as a separate species "*P. macrolopha*", and only relatively recently realized to be adult male of present species. Monotypic.

**Distribution.** Extreme SW Amazonian Brazil (W Acre), SE Peru (E Junín, Cuzco, Madre de Dios, Puno) and NW Bolivia (Pando, N La Paz).



**Descriptive notes.** 14-14.5 cm; 28-31 g. Prominent crest. Male is blackish-grey, head and anterior underparts blackest, flanks palest; interscapular patch white, outer primary narrowly edged white, wing-coverts tipped white; underwing-coverts white. Female has crown cinnamon-rufous, upperparts, wings and tail reddish yellow-brown, wing-coverts edged cinnamon-rufous; side of head tinged greyish, throat and underparts white, tinged grey across breast, tinged cinnamon-olive on sides, flanks and crissum; underwing-coverts white. Subadult male resembles female, blackish primary

coverts the first emerging adult male characters. **VOICE.** Loudsong a single downslurred whistle followed after sizeable interval (e.g. 0.7 seconds) by same note given more emphatically and a short series (e.g. 10 notes, 2 seconds) descending in pitch and intensity; female similar but shorter. Calls include buzzy, complaining "chaaa" (e.g. 0.3 seconds) and more abrupt and clearer "t-wip".

**Habitat.** Understorey and floor of evergreen river-edge forest (*várzea* and transitional) and dense stands of *Guadua* bamboo; mostly below 750 m, but locally up to 1450 m. Floodplain-forests occupied are characterized by such trees as *Cecropia*, *Ochroma* and *Erythrina*, with understorey formed by *Gynerium* cane, *Guadua* bamboo, and variety of broad-leaved, herbaceous plants including *Heliconia* and *Costus*. Also found in dense stands of *Guadua* on shelves above floodplains.

**Food and Feeding.** Little published. Feeds on various insects, including lepidopteran larvae, and egg cases of insects; probably also on spiders. Closely associated pair-members, individuals, or family groups forage mostly at 0-1 m, often to 2-5 m above ground; occasionally higher, e.g. 8 m, especially when vocalizing; usually apart from mixed-species flocks. Deliberate forager; progresses slowly by hops, with pauses of 2-5 seconds to scan for prey; pounds tail down emphatically, then raises it slowly; frequently raises and lowers crest. Forages mostly in dense thickets of *Guadua* bamboo and *Gynerium* cane. Perch-gleans prey especially from bamboo leaves and stems, but also in leaves, vines and branches, by reaching up, out or down with quick stabs of the bill; sallies up to leaves, sometimes as far as to 0.5 m above perch; hops along ground in manner of a thrush (*Catharus*), or drops from perch to leaf litter on ground, sometimes thrashing about in the litter and tossing leaves to expose prey. Once observed at an ant swarm, where it perched and waited 15-30 cm up, and darted forwards or jumped to the ground to attack fleeing arthropods; apparently, follows ants only opportunistically.

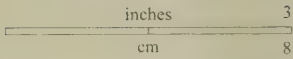
**Breeding.** Nothing known.

**Movements.** Presumed resident.

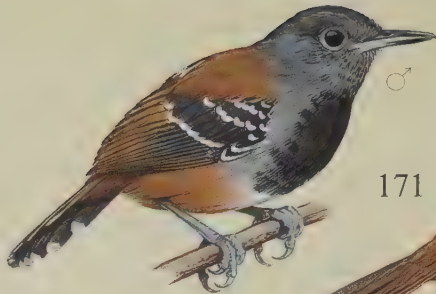
**Status and Conservation.** Not globally threatened. Restricted-range species: present in South-east Peruvian Lowlands EBA. Fairly common in most areas in which it occurs. These include some large protected areas, e.g. Serra do Divisor National Park, in Brazil, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, and Madidi National Park, in Bolivia. Continued protection of these existing parks and reserves should ensure the survival of viable populations of this antbird.

**Bibliography.** Alverson *et al.* (2000), Berlioz (1966), Cory & Hellmayr (1924), Foster *et al.* (1994), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Kratter (1997a), Parker (1982, 2003a), Parker & Bailey (1991), Parker & Remsen (1987), Parker *et al.* (1991), Remsen (2003b), Ridgely & Tudor (1994), Robinson (1997), Robinson & Terborgh (1997), Rosenberg (2003), Servat (1996), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Whittaker & Oren (1999), Zimmer, J.T. (1932d), Zimmer, K.J. (2003a).

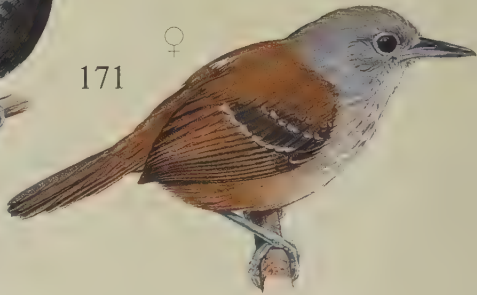




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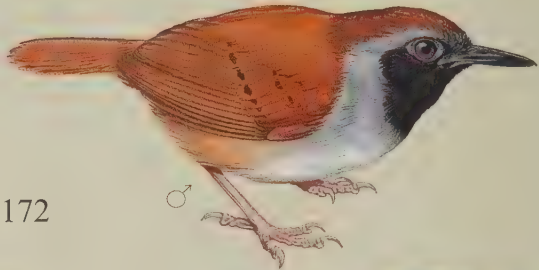
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*ssp longipes*



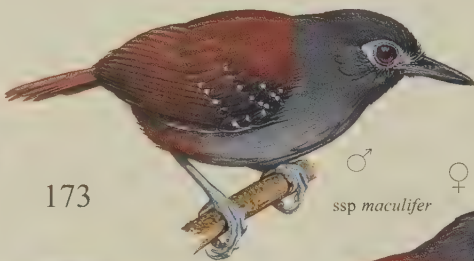
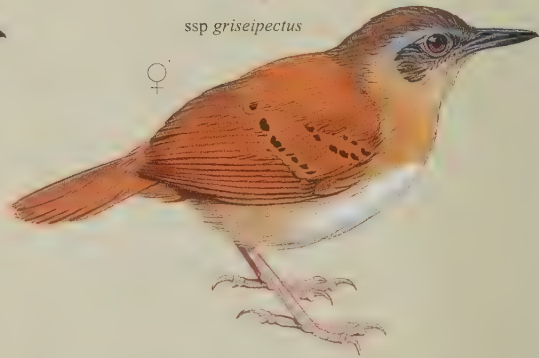
*ssp boucardi*



172



*ssp griseipectus*



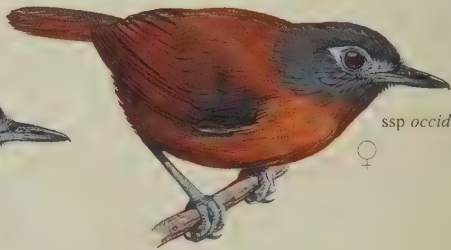
173



*ssp exsul*



*ssp maculifer*



*ssp occidentalis*



174



175





# Genus *MYRMECIZA* G. R. Gray, 1841

## 170. Yapacana Antbird

### *Myrmeciza disjuncta*

**French:** Alapi du Yapacana **German:** Zweifarb-Ameisenvogel **Spanish:** Hormiguero del Yapacana

**Taxonomy.** *Myrmeciza disjuncta* Friedmann, 1945. Cerro Yapacana, Amazonas, Venezuela. Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Affinities of present species uncertain; possibly not closely related to others currently included in genus. Monotypic.

**Distribution.** Locally in E Colombia (Punto Inirida and Caño Ima, in Guainia), SW Venezuela (W Amazonas in vicinity of Cerro Yapacana, village of Picua and left bank of R Baria) and NW Brazil (Jaú National Park, in Amazonas).



**Descriptive notes.** 13.5 cm; 14-15 g. Male has crown and upperparts dark grey, white interscapular patch; wings and tail blackish-grey, wing-coverts and rectrices narrowly tipped white; side of head grey, underparts white, tinged light grey on breast, grey on sides, flanks and crissum (grey sometimes with faint olive or buff cast). Female is like male above but without white wing-covert tips, chin whitish, underparts light reddish yellow-brown, throat paler, flanks tinged grey. Subadult male resembles male, but underparts tinged light reddish yellow-brown. **Voice.** Loudsong two prolonged (e.g. 0.8-1.5 seconds), harsh, frequency-modulated elements separated by short pause containing 1-2 abrupt "pip" notes, first harsh element longer and rises in pitch and intensity, second is more level; occasionally three harsh elements delivered. Calls include single long harsh note at higher pitch than notes of song, also abrupt "squip" which is sometimes repeated and extended into soft whistled notes, and soft rattle.

**Habitat.** Seemingly restricted to understorey and floor of stunted, virtually impenetrable woodland growing on fine, compacted white-sand soils that are seasonally saturated; to 150 m. At Picua (Venezuela) this habitat referred to by local people as "monte cerrado", having rather uniform canopy of 6-10 m with only scattered emergents, few trees thicker than 10 cm at breast height, and abundant bamboo and sawgrass in understorey.

**Food and Feeding.** Feeds on insects, including orthopterans (Tettigoniidae, Gryllidae), hemipterans, and lepidopteran larvae (particularly of geometrid moths); also on spiders. Closely associated partners, individuals, or family groups forage to 1.5 m above ground, apart from mixed-species flocks; mostly on or near ground in dense vegetation. Active, restless forager, progressing by short hops, rarely pausing for more than 2 seconds to scan, usually taking erratic zigzagging path through understorey, with frequent abrupt changes of direction in both vertical and horizontal planes; agile and adept, clings laterally (with lower leg extended, upper one flexed) to slender vertical stems and vines; posture nearly horizontal, with head held higher than axis of body; regularly flicks the tail up and down in shallow 10-degree arc, also dips it slowly to 30 degrees below horizontal before rapidly flicking it back up, less frequently wags tail sideways in slow, somewhat jerky manner, similar to tail motions of *Scelaterus naevius*; habitually flicks wings as it forages, flicks occurring both in and out of synchrony with tail movements. Moves on ground with a series of short hops with minimal pauses between movements, frequently hopping up to a low perch to scan before dropping back down; most frequent ground-foraging attack manoeuvres are gleans from surface of leaf litter or brief probes with the bill beneath the litter, followed by reaches up to glean from undersurfaces of overhanging green leaves and grass blades; commonly jump-gleans 6-15 cm upwards to underside of vegetation. When foraging above ground, perch-gleans most prey from stems, vines and upper and lower surfaces of live leaves, by reaching up, out or down on extended legs with neck craned; prey captured with quick stabs of the bill, and swallowed whole without handling; larger items bashed against perch repeatedly, and manipulated one or more times before being consumed; typically, wipes bill on branch after swallowing prey. At least occasionally follows army ants in pursuit of flushed arthropods. A female at a swarm of *Eciton* ants was the only bird attending the swarm in over 20 minutes; part of the time she scanned the swarm from perches within 0.3 m of ground, dropped to the ground to seize fleeing arthropods, then returned to a low perch, but spent slightly more time in hopping between the columns of ants and tossing dead leaves from litter (with a quick flicking of the bill) to reveal prey hiding beneath.

**Breeding.** Virtually nothing known. At Picua (Venezuela), birds were paired and territorial and responded strongly to tape playback in Jan and Feb, but seldom sang spontaneously (even at dawn), suggesting low levels of breeding during dry season; territories were tightly packed, estimated to be no more than 50-75 m in diameter.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Orinoco-Negro White-sand Forests EBA. Locally abundant. Habitat requirements appear to be highly specific. In Yapacana National Park, in Venezuela, 24 territories located along 1350 m of trail at Picua in 1998; elsewhere in the park, however, surveys of other scrubby woodland (not *monte cerrado*) on white-sand soils failed to reveal any additional territories, and the species has not been found in superficially similar savanna woodland in other parts of Amazonas state. Recent discovery of a population in the extensive (2,272,000 ha) Jaú National Park, in Brazil, extends the species' known range some 500 km S. It occurs also in Pico da Neblina National Park, on Venezuela-Brazil border. Satellite imaging could help to determine the total amount of potential habitat within its known range; surveys needed in order to establish an approximate base population estimate. Continued protection of the national parks in which this thamnophilid is known to exist is critical, particularly with regard to exclusion of illegal gold-mining operations.

**Bibliography.** Borges (2000), Borges & de Almeida (2001), Friedmann (1945), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Ridgely & Tudor (1994), Zimmer (1999).

## 171. Grey-headed Antbird

### *Myrmeciza griseiceps*

**French:** Alapi à tête grise **German:** Graukopf-Ameisenvogel **Spanish:** Hormiguero Cabecigris

**Taxonomy.** *Myrmeciza griseiceps* Chapman, 1923. Palambra, 4000 feet [c. 1220 m], Piura, Peru. Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Relationships uncertain; possibly related to *M. nigricauda*. Monotypic.

**Distribution.** Extreme SW Ecuador (El Oro, Loja) and NW Peru (Tumbes, Piura).



**Descriptive notes.** 12.5-13.5 cm; 15 g. Male has head and upper mantle grey, remaining upperparts olive-brown, white interscapular patch; remiges dark brownish-grey, edged pale brown, wing-coverts black, broadly tipped white, graduated tail dark brownish-grey, tipped white; underparts grey, centre of lower throat and breast black, flanks and crissum olive-brown; underwing-coverts white. Female is like male but paler, throat and breast streaked grey or olive-grey and whitish, belly whiter. Subadult male resembles female. **Voice.** Presumed loudsong a moderate-length (e.g. 0.8 seconds) rattle dropping in pitch and intensity, typically starts with single lower note (most usefully discernible on a spectrogram); female similar, but often with brief break in continuity. Call a doublet of long (e.g. 0.2-0.3 seconds), wheezy, frequency-modulated notes, second at lower pitch, each rising and falling slightly in pitch.

**Habitat.** Understorey of humid and semi-humid evergreen montane forest and ecotones with deciduous forest, at 600-3000 m. In some areas (e.g. Ecuador) mostly in patches of *Chusquea* bamboo. In Tumbes Reserved Zone (Peru), most territories in light-gaps with rank, dense shrubby and coarse grasses to 3 m high, with abundance of small saplings (7-12 m) and scattered larger trees (15-20 m), crowns of saplings and shrubs grown over with herbaceous and woody vine tangles which form dense mats or "umbrellas" of vegetation, shading vine-rich interiors of trees (where tendrils of hanging vines trap arboreal leaf litter); bamboo not particularly common in these territories.

**Food and Feeding.** Little known. Feeds on insects, including stick-insects (Phasmatidae); probably also on other arthropods, including spiders. Partners, individuals, or family groups forage mostly 2-7 m above ground, occasionally to 10 m, alone or, sometimes, associated with mixed-species flocks of other insectivores. Active forager, progressing by short hops and fluttery flights, hitching from side to side, scanning as it goes, with only short pauses between movements; moves in zigzag fashion with frequent abrupt changes of direction; frequently flicks wings, and constantly pounds tail rapidly downwards in c. 30-degree arc and then raises it back slowly to just above plane of body. In Tumbes Reserved Zone (Peru), forages mostly in leafy, vine-matted crowns of understorey saplings and shrubs and in more open, shaded interiors; perch-gleans most prey from surfaces of live leaves (mostly their undersides), bare stems and vines by reaching up, out or down with quick stabs of the bill; somewhat acrobatic, occasionally performs momentary head-first hangs (while clinging with feet) to glean from lower foliage or vines, or clings laterally (lower leg extended, upper leg flexed) to vertical vines while reaching out sideways to stab at prey; picks frequently at arboreal leaf litter, but does not linger more than a few seconds at dead leaves, nor does it manipulate them in any special way (seldom picks more than once or twice at any dead leaf); smaller prey immediately swallowed, bigger prey (e.g. large orthopterans) bashed repeatedly on branches before being swallowed. At higher altitude in Peru (2150 m, at Cruz Blanca, in Piura), individuals foraged within dense bamboo thickets, in darkened recesses under foliage; deliberately hopped and picked at bamboo twigs and dead leaves, behaving like a *Drymophila* species.

**Breeding.** Virtually nothing known. Two juveniles collected in Jun, suggesting species may breed during wet season, Jan-May, when it is also reported to be more vocal.

**Movements.** Presumed resident.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Tumbesian Region EBA. Rare to locally uncommon. Total population thought to number only 2500-10,000 individuals, and assumed to be declining as a result of continued loss of habitat. Occurs in small range (estimated at 17,900 km<sup>2</sup>), in which appropriate habitat is highly fragmented and suffering from ongoing degradation and clearance. Rate of deforestation in W Ecuador below 900 m was 57% per decade during 1958-1988, and continuing destruction of lowland forest in that region is significant, with heavy grazing pressure from cattle and goats preventing tree regeneration in understorey; habitat destruction not so severe at higher elevations, but commercial logging and agricultural conversion remain problems. Species known to be present in only two protected areas, El Tundo Nature Reserve, near Sozoranga, in Ecuador, and Tumbes National Reserve (now part of Northwest Peru Biosphere Reserve), in Peru; at latter site, at least 8 pairs recorded during brief survey in Jan 2001. Enforced protection of these two reserves (including the fencing of El Tundo to exclude cattle) is vital to the continued existence of this thamnophilid, and more surveys are needed in order to detect any additional population reservoirs. Further investigation into its ecology would help to clarify its true micro-habitat needs, particularly with respect to the relative importance of bamboo; this could influence decisions on habitat preservation and management.

**Bibliography.** Best & Clarke (1991), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Fjeldså & Krabbe (1990), Isler & Whitney (2002), Parker (2003a), Parker *et al.* (1985), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rosenberg (2003), Stattersfield & Capper (2000), Stotz *et al.* (1996), Zimmer, J.T. (1932d), Zimmer, K.J. (2003a).

## 172. White-bellied Antbird

### *Myrmeciza longipes*

**French:** Alapi à ventre blanc **German:** Grauband-Ameisenvogel **Spanish:** Hormiguero Ventri blanco

**Taxonomy.** *Drymophila longipes* Swainson, 1825, "some part of Brazil"; error = Trinidad. Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Relationships uncertain. Differences in morphology and voice suggest that races may constitute more than one species. Four subspecies recognized.



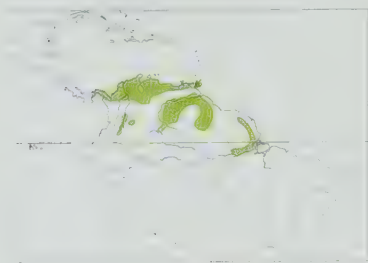
**Subspecies and Distribution.**

*M. l. panamensis* Ridgway, 1908 - E Panama (locally on Caribbean slope E from Colón, Pacific slope E from Colón) and N Colombia (extreme N Chocó E to W slope of NE Andes in La Guajira, César and Bolívar).

*M. l. longipes* (Swainson, 1825) - extreme NE Colombia (E slope of Andes in Norte de Santander), N Venezuela (Zulia, Táchira and Apure E to Sucre) and Trinidad.

*M. l. boucardi* Berlepsch, 1888 - C Colombia (upper Magdalena Valley from Cudinamarca S to Huila).

*M. l. griseipectus* Berlepsch & Hartert, 1902 - C Colombia (E of Andes in Meta and E Guainía), S & F. Venezuela (N Amazonas, N Bolívar, Delta Amacuro), W Guyana, also locally in S French Guiana and NE Brazil N of R Amazon (NE Roraima, C Amapá, EC Pará).



**Descriptive notes.** 14.5-15.5 cm; 24-31 g. Male nominate race has forehead grey, crown rufous-brown, upperparts, wings and tail deep rufous, small white interscapular patch; whitish to light grey supercilium, extending as band down to side of underbody; lores, head side, throat and breast black, belly white, flanks and undertail-coverts rufous-buff; underwing-coverts white, tinged grey. Female is similar to male above except wing-coverts with small black subapical spots, interscapular patch smaller; lores and side of head brownish to blackish-grey, underparts light cinnamon-brown, white posteriorly, flanks and crissum

tinged cinnamon-brown. Subadult male has anterior underparts patchily black and cinnamon-brown. Race *panamensis* has breast more extensively black, less white below; *boucardi* has crown pure grey, less black on breast, female throat and breast richer ochraceous; *griseipectus* male has black only down to uppermost breast, rest of breast grey, large black spots on greater and median wing-coverts, tertials and secondaries, female with grey-brown crown, grey supercilium, dull ochre breast. Voice. Loudsong nominate race = long (e.g. 4 seconds) ringing trill that decelerates and decreases in pitch and intensity; other races appear to vary in extent to which song decelerates, the emphasis placed on initial notes, and note shape. Calls include long (e.g. 0.4 seconds), thin, downslurred whistle, sometimes abbreviated, and a rattle which may vary geographically.

**Habitat.** Understorey and floor of deciduous forest, semi-deciduous forest, gallery forest, second-growth woodland, and shrubby borders of evergreen forest: mostly below 700 m, to 1750 m in upper Magdalena Valley (Colombia). Primarily in deciduous forest and second growth in Panama, much of Colombia, and N Venezuela: found mostly in semi-deciduous and evergreen gallery forest in llanos region of Venezuela and along R Branco, in N Brazil. In much of S Venezuela, the Guianan region and NE Amazonian Brazil (Amapá, Pará), it occupies humid, shrubby borders of tall *terra firme* forest (on both lateritic and sandy soils) and savanna woodland growing on nearly pure white-sand soil; in Amapá, has even been recorded just inside pine (*Pinus*) plantations where these border sandy-soil woodland.

**Food and Feeding.** Little published. Feeds on variety of insects, probably also spiders. Recorded prey in Panama include hemipterans (Pentatomidae), earwigs (Dermaptera), ants (Formicidae). Highly terrestrial. Closely associated partners, individuals, or family groups forage mostly on the ground or within a few centimetres of it, rarely more than 1 m above ground (sometimes higher over ants); usually apart from mixed-species flocks. Deliberate forager; progresses by short hops, separated by frequent, sometimes lengthy, pauses to scan or dig for prey; pounds tail downwards, then slowly raises it; often hops from the ground up to logs or other low, horizontal perches to peer down, then hops back to ground. Frequently peeks at the ground, and brushes dead leaves aside or tosses them with its bill to expose arthropod prey hiding in litter; sometimes digs at one spot in leaf litter for considerable time. Gleans prey primarily from leaf litter, but also from live leaves (mostly their undersides), stems, vines and branches, by reaching up, out or down with quick stabs of the bill also makes short (less than 20 cm) jump-gleans to take prey from undersides of overhanging foliage or branches. Regularly follows army ants (*Eciton burchelli* and *Labidus praedator*), with records of such behaviour in Panama, Venezuela, Trinidad and Guyana, but not a "professional" follower, and recorded more often away from ants; subordinate at swarms to "professional" ant-followers, and is often displaced to periphery of swarms or to higher perches above swarm centre; conversely, often displaces smaller non-professional followers.

**Breeding.** Recorded in Mar-May in Trinidad and in May-Jun in Venezuela (Miranda). Nest in Trinidad described as a shallow saucer of brown pliable twigs and rootlets, with a few light-coloured straw-like stalks on outside, and inner lining of black material like horsehair, simply set in among its supports rather than slung from them, and situated c. 1.2-2.2 m above ground in isolated shrub, tree-fern or aroid (validity of this description has been doubted in view of height above ground); nests in Panama described simply as an open cup. In Trinidad, clutch 2 eggs, dull white to creamy white with variable amount of brown blotches and spots, smaller number of lilac-grey to pale grey or purple spots.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Generally fairly common to common throughout its extensive range. Regions occupied by this species include numerous parks and reserves in nearly every country, e.g. very common in Morrocoy National Park, Venezuela. In some regions, such as N Venezuela, survives in areas of substantial deforestation by colonizing second-growth thickets at edges of human habitation.

**Bibliography.** Barnes (1950), Belcher & Smoother (1936), Chapman (1894), Cherrie (1916a), Cory & Hellmayr (1924), Darlington (1931), Dugand (1947), Eisenmann (1952), Ifrench (1991), Ginés *et al.* (1951), Haffer (1975), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Junge & Mees (1958), Karr (1971a), Kreuger (1968), Mason (1996), McKay (1980), Meyer de Schauensee & Phelps (1978), Morton (1979), Morton & Stutchbury (2000), Moskovits *et al.* (1985), Oniki & Willis (1972), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robinson *et al.* (2000), Schönwetter & Meise (1967), Sick (1993), Snyder (1966), Stotz *et al.* (1996), Thomas (1993), Todd & Carriker (1922b), Tostain *et al.* (1992), Wetmore (1972), Wilkinson & Smith (1997), Willis (1980, 1985b), Willis & Oniki (1972), Zimmer (2003a), Zimmer & Hilty (1997).

## 173. Chestnut-backed Antbird

*Myrmeciza exsul*

French: Alapi à dos roux

Spanish: Hormiguero Dorsicastaño

German: Braunrücken-Ameisenvogel

**Taxonomy.** *Myrmeciza exsul* P. L. Selater, 1859, Gatun, Colón, Panama.

Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Relationships uncertain. Plumage differences among some races may reflect clinal variation. Five subspecies recognized.

**Subspecies and Distribution.**

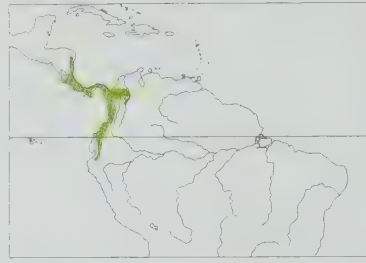
*M. e. exsul* P. L. Selater, 1859 - Caribbean slope from Nicaragua S to W Panama (E to Canal region in Colón).

*M. e. occidentalis* Cherrie, 1891 - Pacific slope in Costa Rica and W Panama (Chiriquí, Veraguas).

*M. e. nigrilaris* Wetmore, 1962 - E Panama (from Colón E of Canal, and Pacific slope in Panamá and NW Darién) and adjacent extreme NW Colombia (N Chocó).

*M. e. cassini* (Ridgway, 1908) - extreme SE Panama (Darién S of Golfo de San Miguel) and N Colombia (N Chocó E to S César and lower Magdalena Valley S to Bolívar).

*M. e. maculifer* (Hellmayr, 1906) - Pacific slope in WC & SW Colombia (S from C Chocó) and W Ecuador.



**Descriptive notes.** 13.5-14.5 cm; 25-30 g.

Male nominate race has head, throat and upper breast greyish-black; upperparts and tail dark chestnut, wing-coverts blacker, edged dark chestnut, alula edged white; lower breast and belly dark grey, flanks and crissum chestnut-brown; underwing-coverts blackish-grey; bare skin around eye blue. Female differs from male in having crown tinged sooty brown, throat dark grey, underparts dark rufous-tinged brown. Juvenile is brown, palest on belly. Race *occidentalis* male is paler than nominate, female brighter rufous below; *nigrilaris* male is also paler, especially below, female underparts

darker than previous; *cassini* male has head and underparts greyer, white wing-covert tips, female paler, throat greyer, wing-covert tips pale buff; *maculifer* male has white wing-covert tips, female breast rufous, belly centre cinnamon, posterior underparts dark brown, wing-covert tips buffy white. Voice. Loudsong 2-3 mellow, slightly downslurred whistles, intervals between them typically longer than notes, final note longer and descending lower in pitch. Calls include long (e.g. 0.5 seconds), harsh, raspy "waaaaa"; also a doublet of rather sharp notes, "wit-wit", sometimes repeated in series, and short rattles.

**Habitat.** Understorey of humid evergreen forest and adjacent mature second-growth woodland; mostly below 900 m, occasionally to 1200 m. Most common in dense, tangled vegetation, particularly at forest borders and in light-gaps (especially around treefalls) within forest. Also occupies more open, semi-humid transitional forest on Pacific slope of Costa Rica. Tends to avoid ridgetops, and not found in low second growth in all parts of range.

**Food and Feeding.** Feeds on a variety of insects and other arthropods; also occasionally on small lizards and frogs. Stomach contents from Panama include beetles (Cerambycidae, Curculionidae, Carabidae, Chrysomelidae), cockroaches and their egg cases (Blattellidae), grasshoppers (Acrididae), earwigs (Dermaptera), bugs (Heteroptera), lepidopteran larvae, spiders, centipedes (Chilopoda), and two elongate seeds. Additional prey reported from field observations include crickets (Gryllidae) and mantids (Mantidae). Pair-members, individuals, or family groups forage mostly 0-1 m above ground, rarely to 2 m; alone or, sometimes, briefly joining mixed-species flocks; mostly in dense undergrowth, particularly around tangled treefalls and decaying logs with abundance of young second growth and sprouting saplings. In study in Costa Rica (race *occidentalis*), 90% of daytime activity was spent in foraging. Deliberate forager, often spending lengthy periods working a small area, progressing by bounding hops and short, fluttery flights, with frequent pauses of up to 10 seconds or more during which it actively peers about for prey; normal foraging involves hopping from the ground up to a low perch (horizontal, inclined or vertical) to scan for several seconds, then hopping back down; often clings laterally (lower leg extended, upper leg flexed) to slender vertical stems, but just as frequently uses logs, root buttresses or thick, woody lianas as perches; frequently pounds tail downwards emphatically to c. 45 degrees below horizontal before slowly raising it to above horizontal, also shallowly flicks wings. Perch-gleans most prey from leaf litter, and from live-leaf, stem, vine, branch or root surfaces, by reaching up, out or down with quick stabs of the bill, sometimes with neck craned and legs extended; sometimes jump-gleans prey from undersides of overhanging leaves, also commonly pounces or sallies from elevated perch to the ground to seize prey and then jumps back up to another perch; when foraging on ground, sometimes tosses leaves with its bill to expose hidden prey; occasionally scans and probes arboreal dead leaves, but more often ignores these. Regularly attends army ants, but not an obligate follower; often bypasses swarms without investigating them, or attends briefly and then moves on, sometimes circling back periodically; displaced to peripheral parts of swarm by "professional" ant-followers *Gymnopithys bicolor* and *Phaenostictus mcleannani*, but antagonistic towards and usually dominant over the smaller *Hylophylax naevii*; most common perch height over ants 0.0-1 m. Commonest prey taken at ant swarms are orthopterans, larger specimens of which are "dissected" by systematic removal of the legs; most captures are perch-gleans to ground or to foliage and vines, also commonly sallies to ground to seize prey, then rapidly flies or jumps to an elevated perch.

**Breeding.** Apr-Aug in Costa Rica and Apr-Nov in Panama. Nest a compact or bulky and messy cup, one in Panama (Barro Colorado I) had external diameter 12.5 cm, internal diameter 6.8 x 6 cm, external height 10 cm, depth 5.3 cm; composed of pieces of vines, stems, twigs, roots and assorted vegetation, often including large projecting dead leaves, sparsely lined with fungal filaments and fibrous rootlets, usually concealed amid low vegetation atop loose foundation of low plants, ferns, dead palm fronds or other organic debris near ground; height above ground of 8 nests in Panama 0.1-0.4 m (mean 0.24 m). Normal clutch 2 eggs, sometimes 1, dull white, speckled, blotched and streaked with purplish or rufous-brown, most heavily on larger end (sometimes forming cap); incubation by both parents, only by female at night, sessions during day at one nest were often long, for female up to 217 minutes (mean 119 minutes) and for male to over 236 minutes (mean 113 minutes); incubation period not known, at least 14 days; both also share in brooding and feeding nestlings, brooding decreases by sixth day, and at one nest no brooding after eighth day; faecal sacs carried away (or occasionally eaten) by parents; at one nest, single young left 9-10 days after hatching; fledglings hide in low tangles, where fed by parents, each taking responsibility for one of the fledglings when brood of two. Predation rates high; young fledged from only 1 of 4 nests watched in Costa Rica and from only 1 of 6 nests in a Panama study.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout most of its range. Occurs in a number of protected areas, e.g. Braulio Carrillo and Corcovado National Parks, Carara Biological Reserve and La Selva Biological Reserve, in Costa Rica, Soberania and Darién National Parks, in Panama, and Rio Palenque Science Centre, in Ecuador. Almost certainly decreasing over much of its range as a result of habitat destruction; some local populations, particularly in e.g. Ecuador and parts of Colombia, could be at risk.

**Bibliography.** Aldrich & Bole (1937), Blake & Loiselle (1991, 2001), Carriker (1910), Cody (2000), Cory & Hellmayr (1924), Eisenmann (1952), Greenberg & Gradwohl (1980, 1985), Gross (1927), Hilty (1974), Hilty & Brown (1986), Howell (1957), Isler & Whitney (2002), Jones (1977), Karr (1971a, 1977), Levey (1988), Marcotullio & Gill (1985), Olivares (1958), Parker & Carr (1992), Remsen & Parker (1984), Ridgely & Greenfield



(2001), Ridgely & Tudor (1994), Ridgway (1911), Schemske & Brokaw (1981), Schönwetter & Meise (1967), Sieving (1992), Skutch (1955, 1969c, 1976), Slud (1960, 1964), Stiles & Skutch (1989), Stotz *et al.* (1996), Swartz (2001), Wetmore (1972), Wilkinson & Smith (1997), Willis (1980, 1983b, 1985b), Willis & Eisenmann (1979), Willis & Oniki (1972), Zimmer (2003a).

## 174. Ferruginous-backed Antbird

### *Myrmeciza ferruginea*

**French:** Alapi à cravate noire

**Spanish:** Hormiguero Ferruginoso

**German:** Weißband-Ameisenvogel

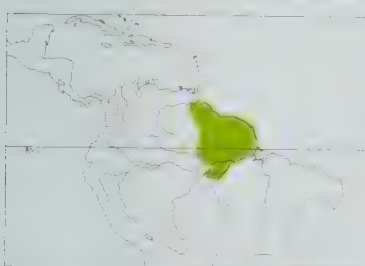
**Taxonomy.** *Turdus ferrugineus* Statius Muller, 1776. Cayenne.

Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Close relationship with *M. ruficauda*, *M. loricata* and *M. squamosa* suggested by similarities in plumage, vocalizations and nest architecture. Two subspecies recognized.

#### Subspecies and Distribution.

*M. f. ferruginea* (Statius Muller, 1776) - E Venezuela (E Bolívar E of R Caroni), the Guianas and NE Amazonian Brazil (E of R Branco and R Negro).

*M. f. eluta* (Todd, 1927) - SC Amazonian Brazil between lower R Madeira and lower R Tapajós.



**Descriptive notes.** 14-15 cm; 24-29 g. Male has crown, upperparts and flight-feathers chestnut, wing-coverts black, broadly tipped pale cinnamon-buff; tail rufous-brown; white stripe behind eye and continuing down neck side to breast side; head side, throat, breast and upper belly black, centre of belly grey, flanks and posterior underparts reddish yellow-brown; underwing-coverts grey, edged white; bare skin around eye blue. Female is similar to male, but chin and throat white, black below limited to breast, belly variably light grey, posterior underparts paler. Race *eluta* has rear underparts paler in both sexes.

female belly whiter. **VOICE.** Male loudsong 2 rapidly alternated notes (e.g. 6 pairs, 1.8 seconds), second one lower-pitched and longer and also descending slightly in pitch from beginning to end of song; female loudsong a repetition (e.g. 10 notes) of the higher-pitched note, sometimes ending with one or two pairs from male loudsong. Calls include variable-length rattles, often one after the other.

**Habitat.** Floor of evergreen forest and adjacent mature second-growth woodland, to 550 m. Mostly in tall *terra firme* forest, particularly around treefalls, but in some areas also found in more stunted savanna woodland growing on sandy soils.

**Food and Feeding.** Little published. Feeds on insects and spiders; recorded prey in Surinam includes beetles (Cassidae), ants (Formicidae), grasshoppers (Acrididae), hemipterans, homopterans (Jassidae), spiders (Araneidae). Highly terrestrial. Closely associated pair-members, individuals, or family groups forage almost entirely on the ground or within a few centimetres of it, rarely more than 1.5 m above ground, usually in well-shaded situations. Deliberate forager; walks steadily over forest floor, occasionally hopping up on to and walking along mossy logs, sometimes hopping or walking up through branches of fallen trees; bobs head as it walks, also habitually flicks wings; posture mostly horizontal with head held above axis of body; tail held mostly level with body or slightly depressed, regularly flicked up and down in very shallow arc. Gleans prey directly from surface of leaf litter, from stem and branch surfaces, and from undersides of live leaves, by reaching down, out or up with quick stabs of the bill, or by short dashes followed by a lunge; also regularly jump-gleans prey from undersides of overhanging leaves, stems and branches. Often attends army ants (*Eciton burchellii*), with records from Brazil and Guyana; usually only a brief visitor, but individuals recorded as irregularly present at a swarm for up to 280 minutes; typically remains at periphery of ants and loses interest quickly; one record of a bird near ants being supplanted by *Pernostola rufifrons*.

**Breeding.** Recorded in Sept-Mar in French Guiana, and nest found in Jun in Surinam: full-sized young bird following adult male in Feb in Brazil (Manaus). A nest in French Guiana was in a cup of *Marasmius* fibres and rootlets, on ground in litter and in shelter of an obstacle, and partially sheltered by a large cap of small twigs and dead leaves; in Surinam an open cup of dead leaves, lined with very fine roots, and placed on ground; in Guyana nest described as a cup, lined with leaves, on ground at base of a sedge. Normal clutch 2 eggs, creamy, entirely covered with longitudinal purplish lines, some of them broadening toward blunt end.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout most of its range. Regions in which this species is found include some protected areas, e.g. Brownsberg Nature Park and Raleigh Falls-Voltzberg National Park, in Surinam, Imataca Forest Reserve and El Dorado, in Venezuela, and Tapajós National Park, Ducke Reserve and the BDFPP INPA forests N of Manaus, in Brazil; also extensive areas of suitable habitat which, although not formally protected, are at little risk being developed in near future.

**Bibliography.** Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Dick *et al.* (1984), Haverschmidt & Mees (1994), Hilty (2003a), Isler & Whitney (2002), Mason (1996), Meyer de Schauensee & Phelps (1978), Novaes (1980), Oniki & Willis (1972), Oren & Parker (1997), Reynaud (1998), Ridgely & Tudor (1994), Robbins (2003b), Sick (1993), Snyder (1966), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Stouffer & Bierregaard (1995), Stratford (1997, 2000), Thiollay (1992, 1994), Tostain (1980a, 1980b, 2003), Tostain *et al.* (1992), Wilkinson & Smith (1997), Willis (1977, 1984a, 1984b, 1991), Zimmer (2003a).

## 175. Scalloped Antbird

### *Myrmeciza ruficauda*

**French:** Alapi barbu

**Spanish:** Hormiguero Festoneado

**German:** Nördlicher Schuppenameisenvogel

**Taxonomy.** *Myiothera ruficauda* Wied, 1831, Rio Doce, Espírito Santo, south-eastern Brazil.

Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Close relationship with *M. ferruginea*, *M. loricata* and *M. squamosa* suggested by similarities in plumage, vocalizations and nest architecture. Two subspecies recognized.

#### Subspecies and Distribution.

*M. r. soror* Pinto, 1940 - coastal NE Brazil (Paraíba S to Alagoas).

*M. r. ruficauda* (Wied, 1831) - E Brazil in SE Bahia, extreme E Minas Gerais and Espírito Santo.



**Descriptive notes.** 14-15 cm. Male has crown to upper back black, feathers edged clay colour, rear superciliary feathers edged white, lower back black with ochraceous-tinged white feather edges, interscapular patch white, rump rufous, tail rufous-brown; remiges brown, edged rufous, wing-coverts black, tipped light buff; head side and throat black, feathers of breast and sides black with broad white edges, posterior underparts ochre-brown; underwing-coverts light grey, edged white. Female is like male but browner above, superciliary region and side of head mottled pale buff and brownish-grey, feather edges on back wider and

darker, throat white, faintly scalloped grey, breast pale buff, scalloped blackish. Race *soror* is larger and paler. **VOICE.** Loudsong a series (e.g. 2-1 seconds) of doublets delivered so rapidly that they can barely be discriminated in musical rattle that rises and falls in pitch. Call a short (e.g. 0.05-0.1 seconds), buzzy (frequency-modulated) "squit".

**Habitat.** Floor of humid and semi-humid evergreen forest, mature second-growth woodland and, at least sometimes, contiguous degraded second growth; mainly below 550 m, rarely to 950 m. At Sooretama Ecological Reserve (Espírito Santo) has been reported from interior of tall forest, but is most often found in drier forest where understorey characterized by abundance of thick, woody vines and slender tree trunks. In N (*soror*) most often in semi-humid forest with shaded, fairly open understorey characterized by numerous small saplings and well-developed leaf litter, and usually near treefall or other light-gap with dense vine tangles or brush piles.

**Food and Feeding.** Little published. Feeds on various insects and other arthropods; stomach of one specimen contained 3 grasshoppers (Acrididae), 3 spiders (Araneae), a beetle (Coleoptera), a cockroach (Blattidae), and other insects. Also observed to take crickets (Gryllidae), and millipedes (Diplopoda) and small frog fed to chicks. Highly terrestrial. Closely associated partners, individuals, or family groups forage mostly on the ground, occasionally just above it, and apart from mixed-species flocks; usually in shaded areas of forest floor with well-developed leaf litter, often near brush piles and ground-level tangles of woody vines (which used more for cover when alarmed). Somewhat lethargic; progresses by short hops, separated by frequent stops to flip dead leaves from the litter (at times spending minutes at a time in single spot), sometimes hopping up to low, mostly horizontal or inclined perch to peer about, before dropping back to ground; while hopping, slowly dips the tail (which often partially fanned) and then flicks it upwards more rapidly. Tosses leaves in manner of a leaf-tosser (*Sclerurus*), usually with a vigorous sideways flick of the bill, sometimes by picking up a leaf with bill and then throwing it; also probes in litter, sometimes burrowing with its head under the leaves. Leaf-litter arthropods, once exposed, are seized with a quick stab of the bill. Also gleans prey from stems, vines or undersides of live leaves, by reaching up, out or down, or by short, upward-directed jump-gleans. Not known to follow army ants.

**Breeding.** In Alagoas, nests found mainly in Apr but three in Oct (details previously unpublished); in S (Espírito Santo), gonadal condition of birds, and female with ripe egg in oviduct in Nov, indicates breeding in Oct-Dec. Following details from Alagoas. Nest a cup constructed primarily of dead leaves, e.g. of sedge (Cyperaceae), lined with *Marasmius* fibres and sometimes fine stalks and leaf veins, outside dimensions 14.7-19.5 × 11.3-18 cm and 8-15 cm high, inside 6.2-7.5 × 6-6.4 cm and 4.5-8 cm high, weight of three nests 25 g, of one 40 g; placed on ground among or on platform of dead leaves, two in tangle of sedges, one partially covered by leaves of a shrub and bordered by a vine. Clutch 2 eggs, 22 × 16.5 mm, white, intensely marbled with fine brownish-red lines and a few darker lines; incubation by both sexes, 15 days at one nest; hatchling naked, skin glossy dark greyish-violaceous; during 160 minutes' observation in morning at a nest with two 5-day-old chicks, adults usually arrived together (male 8 visits, female 6), delivered whole insects (9 millipedes, 4 cockroaches, 2 crickets, 1 small frog), fed chicks rapidly, then swallowed or carried away a faecal sac; nestling period 12 days at two nests, 13 and 14 days at two others.

**Movements.** Resident.

**Status and Conservation.** ENDANGERED. Restricted-range species: present in Atlantic Forest Lowlands EBA and Atlantic Slope of Alagoas and Pernambuco EBA. Uncommon and patchily distributed throughout its highly fragmented range. Has undergone serious population declines resulting from habitat destruction, and now seemingly restricted to a few scattered patches of forest. Most lowland localities in which the species has been recorded either have already been cleared or are under pressure, and even the few reserves in which it hangs on are not completely secure. Known to occur in total of seven protected areas: Tapacurá Ecological Station (350 ha), Serra dos Cavalos UFPE Ecological Station (450 ha) and SALTINHO Biological Reserve (500 ha), in Pernambuco; Murici Ecological Reserve (3000 ha) and Pedra Talhada State Park (4469 ha), in Alagoas; and Sooretama Biological Reserve (24,000 ha) and Córrego do Veadó Biological Reserve (2392 ha), in Espírito Santo. Most of these sites are small, and some have yielded only single records of this thamnophilid. Primary stronghold for nominate race is Sooretama, where it was variously considered to be uncommon to fairly common in 1980s and 1990s, but was not detected in a brief 2-day survey in 2001; a localized and incredibly violent wind storm in Oct 2001 resulted in massive destruction of forest on one side of the reserve, and effects of this disturbance on resident bird populations, including of present species, have yet to be determined. N race *soror* is locally more common than nominate, but it, too, hangs on in just a few known localities, with principal strongholds being the Murici and Pedra Talhada reserves; repeated visits to Murici during 1996-2002 constantly located 5-8 territories along the dirt track through centre of reserve. Not included in the list of formally protected areas is Fazenda Petropolis/Usina Serra Grande (Alagoas), a privately owned tract of some 3000 ha of upland semi-humid forest and mature second-growth woodland that has been selectively logged, and is owned/managed by a sugar-cane processing company; 3 territories of *soror* were located at Usina Serra Grande during 1996 surveys, and the area holds promise as a sanctuary for this and several other localized endemics, including *Terenura sicki*. Continued protection of existing reserves, including more vigilant protection of the Murici Ecological Reserve (being eroded at its margins by fire, and still subjected to illegal timber removal in Jan 2000) is critical to the continued survival of this species. In addition, all remaining unprotected patches of forest within its range should be surveyed for potential undetected populations.

**Bibliography.** Anon. (2002a), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Mazar Barnett & Buzzetti (2003), Ridgely & Tudor (1994), Schubart *et al.* (1965), Scott & Brooke (1985), Sick (1993), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Studer (2002), Wege & Long (1995), Zimmer (2003a).





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PLATE 65

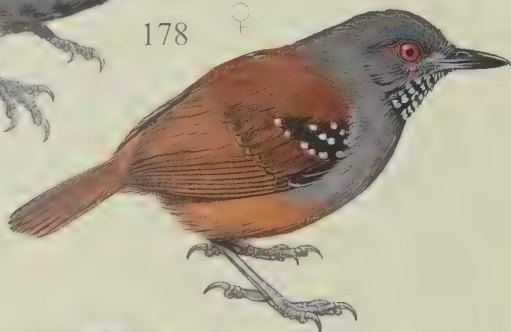
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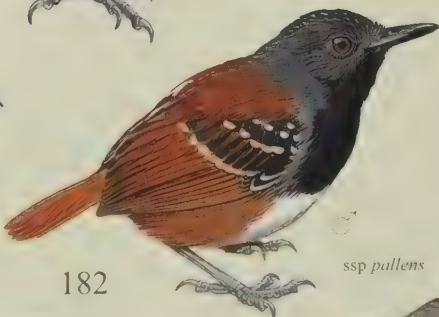
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182

ssp pallens



183

ssp hemimelaena





## 176. White-bibbed Antbird

### *Myrmeciza loricata*

French: Alapi cuirassé

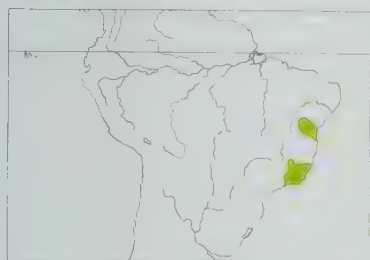
German: Schmuckbrust-Ameisenvogel

Spanish: Hormiguero Enmascarado

**Taxonomy.** *Myiothera loricata* M. H. K. Lichtenstein, 1823, Bahia, Brazil.

Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained herein pending further phylogenetic study. Close relationship with *M. ferruginea*, *M. ruficauda* and *M. squamosa* suggested by similarities in plumage, vocalizations and nest architecture. Forms a superspecies with *M. squamosa*, and has been considered conspecific by some authors. Monotypic.

**Distribution.** E Brazil in C Bahia, E Minas Gerais, Espírito Santo and Rio de Janeiro.



**Descriptive notes.** 14-15 cm. Male has crown black with broad rufous-chestnut feather edges, long white supercilium tinged light buff, black head side to upper throat; upperparts, flight-feathers and tail rufous-chestnut, white interscapular patch, wing-coverts black, broadly tipped white, greater coverts tipped buff; lower throat and underparts white, breast scalloped black, rear underparts light ochre-brown; underwing-coverts light grey, edged white. Female is similar to male, but crown dark reddish yellow-brown, supercilium pale buff, upperparts paler, throat ochraceous buff, underparts mostly white, black feather bases

of breast concealed, flanks and crissum pale buff, underwing-coverts white. Voice. Loudsong a countable series of doublets (e.g. 8 doublets, 2-8 seconds), each consisting of abrupt note followed by longer note, descending in pitch throughout while rising and falling in intensity. Calls include short (e.g. 0-6 seconds) rattle, sometimes ending with clear downslurred note, and short (e.g. 0-1 seconds), harsh, mostly downslurred note.

**Habitat.** Floor of humid foothill evergreen forest and adjacent tall secondary woodland, at elevations of 700-1300 m. Seems to prefer old light-gaps and other areas inside forest having high density of slender saplings and abundance of broad-leaved herbaceous plants in understorey; often on slopes.

**Food and Feeding.** Little published. Feeds on insects, probably also spiders. Highly terrestrial. Closely associated partners, individuals, or family groups forage mostly on the ground, but also in brush piles and vine tangles to 1 m, and apart from mixed-species flocks. Active forager; moves quickly and continuously across ground, progressing by short hops, and occasionally hopping on to logs, brush piles or low vine tangles, through which it works rapidly before hopping back to ground; regularly flicks wings, also flicks tail (normally held cocked slightly above horizontal) rapidly upwards before slowly lowering it. Takes prey from leaf litter (normally without flipping leaves) by reaching with a quick stab of the bill, or by sudden dash ending in a lunge; just as frequently gleans items from lower stems and undersides of leaves of understorey plants, either by reaching or jumping upwards or by slightly longer (to 30 cm) upward-directed diagonal or vertical sallies. Occasionally visits swarming army ants (*Eciton burchelli*): such visits usually brief, although one record of individual attending swarm for 6 hours; over ants, prey pecked from ground, from low trunks by jumping, or by short upward sallies to air, leaves or debris.

**Breeding.** Little known. Two nests documented, in Nov and Dec. One nest described as in form of a badly made bowl of plant stems and fibres without connections between them, placed on fallen branches and leaves in bamboo thicket; other, in Rio de Janeiro (details previously unpublished), had rather tall walls of dead leaves of trees and bamboo, external measurements 13.2 × 15.5 and 12 cm high, inside 5.7 × 5.5 cm and 5.8 cm high, built on platform of dead leaves on ground. Clutch 2 eggs, 21.5 × 16 mm, white, so heavily covered with fine reddish dots as to appear reddish, this colour blended with violet tone "at posterior end", some very dark points and traces at intervals, in Rio de Janeiro nest white to cream, heavily spotted and vermiculated vinaceous; other eggs described as white with a wreath of brown flecks and dots.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Atlantic Forest Lowlands EBA. Uncommon to fairly common throughout its range. This includes several large protected areas, e.g. Serra dos Órgãos and Itatiaia National Parks, Augusto Ruschi Biological Reserve, Caraça National Park and Rio Doce State Park. Continued protection of the existing parks and reserves should ensure the long-term viability of this species. On the local scale, some populations, such as those in the Serra do Ouricana, in Bahia, are at risk from accelerating habitat destruction.

**Bibliography.** Buzzetti (2003b), Cory & Hellmayr (1924), Davis (1945, 1946), Ferreira de Vasconcelos & Melo-Júnior (2001), Isler & Whitney (2002), Parker & Goerck (1997), Ridgely & Tudor (1994), Schönwetter & Meise (1967), Scott & Brooke (1985), Sick (1993, 1997), Sneath & Schreiner (1929), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Willis (1984b), Zimmer (2003a).

## 177. Squamate Antbird

### *Myrmeciza squamosa*

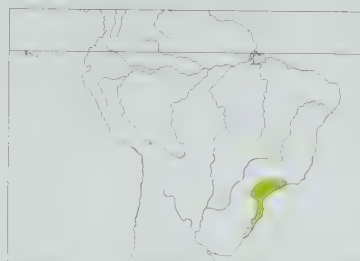
French: Alapi écaillé

German: Südlicher Schuppenameisenvogel

Spanish: Hormiguero Escamoso

**Taxonomy.** *Myrmeciza squamosa* Pelzelin, 1868, Mato Dentro and Ipanema, São Paulo, Brazil. Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained herein pending further phylogenetic study. Close relationship with *M. ferruginea*, *M. ruficauda* and *M. loricata* suggested by similarities in plumage, vocalizations and nest architecture. Forms a superspecies with *M. loricata*, and the two have been considered conspecific by some authors. Monotypic.

**Distribution.** SE Brazil in C & E São Paulo, C & E Paraná, E Santa Catarina and NE Rio Grande do Sul.



**Descriptive notes.** 14-15 cm; 16.5-20 g. Male has crown and upperparts dark yellowish-brown, longish grey-tinged white supercilium, black head side to throat; some black intermixed on back, white interscapular patch; remiges brownish, edged rufous, wing-coverts black, broadly tipped white, tail feathers edged tawny; breast and side feathers black with broad white margins, belly white, flanks and crissum ochre-brown; underwing-coverts light grey, edged white. Female differs from male in paler upperparts, white throat faintly barred grey, white underparts, olive-brown sides and flanks. Voice. Loudsong a count-

able series of doublets (e.g. 7 doublets, 2-1 seconds), similar to that of *M. loricata* but starts at higher frequency and descends substantially more in pitch, also short first note of each doublet more abrupt and thinner-sounding. Call a short rattle and short downslurred note, resembling that of *M. loricata*.

**Habitat.** Floor of humid lowland and foothill evergreen forest, tall secondary woodland, and locally sandy woodland along coast (*restinga*); from sea-level to 1000 m. Seems to prefer old light-gaps and other areas inside forest with high density of slender saplings and abundance of broad-leaved herbaceous plants in understorey.

**Food and Feeding.** Little published. The ecological counterpart of *M. loricata*. Feeds on variety of insects, spiders and other arthropods, and on small snails. Highly terrestrial. Closely associated partners, individuals, or family groups forage mostly on the ground, also in brush piles and vine tangles to 1 m; typically apart from mixed-species flocks, but occasionally joins flocks moving through its home range. Active forager; moves quickly and continuously across ground, progressing by short hops, and occasionally hopping up on to logs, brush piles or low vine tangles, through which it works rapidly before hopping back down; regularly flicks wings, and flicks tail (normally held slightly cocked) rapidly upwards before slowly lowering it. Takes prey from leaf litter (normally without flipping leaves) by reaching with a quick stab of the bill, or by sudden dash ending in a lunge; just as frequently gleans prey from lower stems and undersides of leaves of understorey plants, either by reaching or jumping upwards or by slightly longer (to 30 cm) upward-directed diagonal or vertical sallies. Once noted as briefly following an ant (*Eciton burchelli*) raid in São Paulo.

**Breeding.** Poorly known. Single known nest described simply as being "near ground level", appears from an accompanying drawing to be an open cup located at base of small stump and perhaps placed on exposed roots. Eggs whitish, sometimes pinkish, variously described as white with violet tinge on one end and scattering of tiny red spots, or as covered with reddish-brown and deep purple spots and speckling, or as having spotting faded and nearly absent (especially at pointed end) but with red threads coming together to form wreath at blunt end.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Atlantic Forest Lowlands EBA. Fairly common throughout its range. Region inhabited includes several formally protected areas, e.g. Serra da Bocaina National Park, Serra do Mar State Park, Carlos Botelho State Park, and the *restinga* reserve at Itapoa, as well as some privately protected properties such as Fazenda Capricornio, near Ubatuba, and Fazenda Intervalles, near Capão Bonito. Continued protection of these existing parks and reserves should ensure the long-term survival of this species. In addition, it appears to flourish in selectively logged forest.

**Bibliography.** Aleixo (1999), Belton (1985), Bencke & Kinde (1999), Cory & Hellmayr (1924), Höfling *et al.* (1986), Isler & Whitney (2002), Machado (1999), Oniki (1981), Parker (2003a), Ridgely & Tudor (1994), do Rosário (1996), Schönwetter & Meise (1967), Sick (1993), Willis (1984b), Zimmer (2003a).

## 178. Dull-mantled Antbird

### *Myrmeciza laemosticta*

French: Alapi tabac

German: Grauscheitel-Ameisenvogel

Spanish: Hormiguero Guardarribera

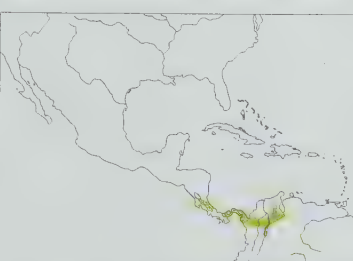
**Taxonomy.** *Myrmeciza laemosticta* Salvin, 1865, Tucuriquí, Costa Rica.

Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Forms a superspecies with *M. nigricauda*, female of which formerly treated as a race of present species; probably also close to *M. berlepschi*. Described races *bolivari* (C Colombia) and *venezuelae* (Venezuela) synonymized with *palliat*, which itself may possibly intergrade with nominate in NW Colombia. Two subspecies currently recognized.

**Subspecies and Distribution.**

*M. l. laemosticta* Salvin, 1865 - E Costa Rica (Caribbean slope) and Panama (locally on both slopes E from Veraguas and San Blas).

*M. l. palliat* Todd, 1917 - N & NC Colombia (N slope of Andes from Cesar S to Córdoba and S in Magdalena Valley to Caldas) and NW Venezuela (Zulia, Mérida).



**Descriptive notes.** 13-14 cm; 24 g. Male has head to neck side and upper mantle blackish-grey, upperparts dark reddish-brown, often black spots visible at edges of white interscapular patch; flight-feathers and tail blackish-brown, edged dark reddish-brown, greater wing-coverts dark reddish-brown, tipped cinnamon, median and lesser coverts black, tipped white; throat black, underparts dark grey, irregularly spotted black, flanks and undertail-coverts reddish-brown; underwing-coverts grey; iris red. Female resembles male except grey areas less blackish, crown sometimes tinged reddish-brown, throat black,

spotted or barred white, median wing-coverts tinged cinnamon. Race *palliat* is paler than nominate. Voice. Male loudsong a countable series (e.g. 8 notes, 1-8 seconds) of short notes, begins with 3 upslurred to flat notes and abruptly switches to 5 evenly paced downslurred notes; in



single recording of race *palliat*a from Caldas, transition from initial to terminal notes is smooth; female loudsong initial 3 notes longer and raspier than those of male, followed by 2-4 abrupt terminal notes, dropping in pitch and intensity, often delivered at end of male's song. Calls include short (e.g. 0.1-0.2 seconds), burry, downslurred notes, also abrupt, sometimes doubled, "chip" notes.

**Habitat.** Understorey and floor of wet evergreen forest; mostly at 300-750 m, locally to near sea-level and up to 1500 m. Primarily in foothills, mostly in damp ravines and on slopes bordering streams, particularly where treefalls and other light-gaps have resulted in dense, herbaceous understorey.

**Food and Feeding.** Little published. Feeds on various insects and other arthropods, such as spiders. Recorded prey in Costa Rica includes beetles (Coleoptera), cockroaches (Blattoidea), crickets (Gryllidae), insect larvae, spiders, and sow bugs (Isopoda). Largely terrestrial. Pair-members, individuals, or family groups forage mostly 0-1 m above ground, usually apart from mixed-species flocks; chiefly in shaded, damp ravines, often near streams, and among dense treefall tangles or thickets of broad-leaved herbaceous plants, mostly on ground but frequently hopping up to low perches and then down again. Active but deliberate forager, progressing by short hops and short, fluttering flights, separated by frequent pauses of 1-2 seconds to scan for prey (usually from elevated perch); regularly pounds tail down emphatically, then slowly raises it to just above horizontal. Most prey taken by direct glean, either from leaf litter (usually without flipping leaves) or from stems, live leaves or roots by reaching up, out or down with quick stabs of the bill; regularly jumps or makes short (less than 30 cm) fluttering sallies to glean prey from undersides of overhanging leaves. Smaller prey immediately swallowed; larger items beaten vigorously against branches before being consumed. Occasionally follows swarms of army ants (*Eciton burchellii*), this behaviour documented for Panama and Colombia.

**Breeding.** Little known. Single nest found in Mar in Colombia, a thin cup low in a *Piper* shrub (no indication of whether suspended or supported by branches) situated on a steep gorge; contained 2 eggs, white, with cinnamon spots at larger end.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Generally uncommon and patchily distributed throughout rather limited range. Main strongholds may be in Costa Rica, where locally fairly common in Braulio Carrillo National Park, and in E Panama, e.g. Darién National Park. Considered to be of high sensitivity to disturbance, and, in view of its small geographical range and narrow elevational limits, this species should be monitored for signs of decline. In general, foothill elevations to which it is largely confined are undergoing intensive clearance for coffee and other agricultural uses throughout Central America and Andean regions of Colombia and Venezuela. Much of area previously occupied in NW Venezuela now heavily deforested, and few recent records from there.

**Bibliography.** Anon (1998a), Cory & Hellmayr (1924), Ginés & Aveledo (1948), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Karr (1971a), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robbins & Ridgely (1991), Stud (1964), Stiles & Skutch (1989), Stotz *et al.* (1996), Wetmore (1972), Willis (1985b, 1988b), Zimmer (2003a).

## 179. Esmeraldas Antbird

### *Myrmeciza nigricauda*

French: Alapi des Esmeraldas

Spanish: Hormiguero de Esmeraldas

German: Schiefergrauer Ameisenvogel

**Taxonomy.** *Myrmeciza nigricauda* Salvin and Godman, 1892, Intag, Imbabura, Ecuador.

Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Forms a superspecies with *M. laemosticta*, and female formerly treated as a race of that species; also close to *C. berlepschi*. Male was formerly placed with latter species in separate genus, and known as *Stipia rosenbergi*; sexes only relatively recently recognized as belonging to same species. Monotypic.

**Distribution.** Pacific slope in W Colombia (S from C Chocó) and W Ecuador (S to El Oro).

**Descriptive notes.** 13-13.5 cm; 22-23 g. Male is dark grey, wings and tail darker, interscapular patch white; wing-coverts black, tipped white; iris red. Female differs from male in having upperparts dark reddish-brown, remiges dark brown, broadly edged dark rufous-brown, tail washed rufous, throat barred black and white, rear underparts ochre-brown. **VOICE.** Male loudsong (e.g. 6 notes, 2 seconds) begins with 3-4 flat, burry notes that become more intense, followed by 2-3 higher-pitched and weaker notes; female 3 notes, longer and more rasping than those of male, followed by 2-4 abrupt notes, dropping in pitch and intensity. Calls include short (e.g. 0.1-0.2 seconds) downslurred notes, also abrupt "chip" notes. Calls and female loudsong resemble those of *M. laemosticta*.

**Habitat.** Understorey and floor of wet foothill evergreen forest and mature second-growth woodland; mostly at 500-1000 m, but locally down to 150 m or as high as 1500 m. Typically in shaded, damp ravines with dense tangles and abundant herbaceous vegetation in understorey; also in rank growth along landslides and in treefalls in interior of foothill forest.

**Food and Feeding.** Little published. Feeds on insects, probably also other arthropods such as spiders. Pairs, individuals, or family groups forage mostly 0-1 m above ground, usually apart from mixed-species flocks. General behaviour poorly documented; reported to be similar to that of *M. laemosticta* or *M. exsul*. Occasionally follows army-ant swarms.

**Breeding.** Almost nothing known. Record of stub-tailed young following two adults in Jun in Colombia (Valle). Eggs in Ecuador reported to be pinkish, variably marked with reddish-brown and dark purple spots and lines.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common throughout its somewhat restricted range. Although large expanses of intact, suitable habitat still exist within its range, relatively little of it is formally protected. Most of existing reserves in Chocó region are primarily montane, with little forest protected below 1000 m. Establishment of more reserves in the species-rich lowlands and foothills of Pacific slope of Colombia and Ecuador is needed.

**Bibliography.** Cory & Hellmayr (1924), Hilty (1974, 1997), Hilty & Brown (1986), Isler & Whitney (2002), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robbins & Ridgely (1990, 1991), Schönwetter & Meise (1967), Stotz *et al.* (1996)

## 180. Stub-tailed Antbird

### *Myrmeciza berlepschi*

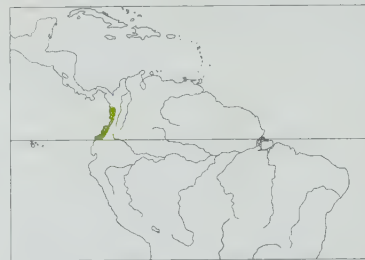
French: Alapi à queue courte

German: Kurzschwanz-Ameisenvogel

Spanish: Hormiguero Colimoch

**Taxonomy.** *Pyriglena berlepschi* Hartert, 1898, Cachabi, 500 feet [c. 150 m], Esmeraldas, Ecuador. Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Present species was formerly placed in separate genus *Stipia*, along with *M. nigricauda*. Appears to be closely related to latter, and perhaps also to *M. laemosticta*. Monotypic.

**Distribution.** Pacific slope in W Colombia (S from C Chocó) and NW Ecuador (Esmeraldas).



**Descriptive notes.** 13.5-14.5 cm. Male has plumage entirely black, except for white interscapular patch; iris deep red. Female differs in having wing-coverts dotted white at tips, white spots from throat to upper belly, belly spots sometimes widened to form scale-like pattern. **VOICE.** Loudsong a short (e.g. 8 notes, 2-3 seconds) series of similar downslurred whistles, first one higher-pitched, initial notes gaining in intensity and lengthening, but nearly evenly paced. Calls include short (e.g. 0.1-2 seconds) downslurred, unclear (frequency-modulated) note, sometimes placed in rapidly delivered series of variable unclear notes.

**Habitat.** Understorey of wet lowland and foothill evergreen-forest edge and adjacent tall second-growth woodland, to 650 m. Prefers rank, densely vegetated forest borders and light-gaps over forest interior. More at edges and in second growth than *M. nigricauda*; replaced by that species at higher elevations in areas where ranges overlap.

**Food and Feeding.** Little recorded. Feeds on insects, probably also on other arthropods, including spiders. Partners, individuals, or family groups forage mostly 0-2 m above ground, usually not associated with mixed-species flocks. Remains mostly in dense undergrowth, where it clings laterally to slender vertical stems or perches on horizontal and inclined branches. Sometimes follows army-ant swarms in pursuit of prey flushed by the ants. Pounds tail downwards while foraging.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Chocó EBA. Uncommon to locally fairly common, but patchily distributed. Although not considered at immediate risk, this species should be monitored for signs of decline. Chocó region is under intense pressure from human colonization, logging, cattle grazing, mining, and cultivation for coca and palm plantations; deforestation most severe in coastal plain and foothills below 2000 m, the zone occupied by this species. Most existing Chocó reserves are centred on montane areas, leaving the biologically diverse lowlands and lower foothills relatively unprotected. Establishment of more reserves in this elevational zone is needed.

**Bibliography.** Cory & Hellmayr (1924), Hilty & Brown (1986), Isler & Whitney (2002), Parker & Carr (1992), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robbins & Ridgely (1991), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Willis (1985b).

## 181. Grey-bellied Antbird

### *Myrmeciza pelzelni*

French: Alapi à ventre gris

German: Tupfelwangen-Ameisenvogel

Spanish: Hormiguero Ventrigris

**Taxonomy.** *Myrmeciza pelzelni* P. L. Selater, 1890, Marabitanas, Rio Negro, Brazil.

Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Relationships of present species uncertain. Monotypic.

**Distribution.** E Colombia (C Caquetá, SE Guainía), S Venezuela (SW Amazonas) and extreme NW Brazil (upper R Negro region).



**Descriptive notes.** 13-14 cm; 17-18.5 g. Male has forehead and forecrown dark greyish-brown, upperparts yellowish red-brown; wings and tail dark reddish-brown, wing-coverts blackish with large pale buff spots at tips, tertials with smaller spots; side of head mottled whitish and grey, throat and breast black, bordered with grey, grey merging into reddish yellow-brown posterior underparts; underwing-coverts grey, tinged brown. Female is like male but wing-covert spots larger, no spots on tertials, throat to belly mostly white, upper breast scaled blackish. **VOICE.** Loudsong a series (e.g. 15 notes, 4-4 seconds) of relatively

high-pitched (e.g. 5 kHz) unclear (frequency-modulated), slightly upslurred notes that gain in intensity, notes much longer than intervals. Call a short (e.g. 0.4-0.7 seconds), relatively high-pitched rattling trill, declining in intensity.

**Habitat.** Understorey and floor of various types of lowland evergreen forest on predominantly white-sand soils, to 350 m. In NW Brazil, most common in Amazonian *caatinga*, with canopy of 20-25 m, mostly slender-trunked trees, abundant small epiphytic plants, relatively open understorey with high light penetration, and little ground cover except for well-developed leaf litter. Also occurs in stunted (7-12 m), extremely dense woodland growing on pure white-sand soils with abundant terrestrial bromeliads; less frequently in taller (30 m) transitional forest between upland Amazonian *caatinga* and seasonally flooded *igapó*.

**Food and Feeding.** Nothing published. Feeds on variety of insects, including crickets (Gryllidae) and grasshoppers (Acrididae); also on spiders. Closely associated pair-members, individuals, or family groups forage almost entirely on the ground, occasionally on logs or branches of fallen trees to 0-3 m; does not associate with mixed-species flocks. Walks a zigzag route, with head held slightly forward, tail frequently wagged (slower on downstroke, faster upstroke) through shallow arc, and wings frequently twitched; a male frequently flicked a single wing out to the side, possibly to startle cryptic prey into moving. Arthropods are seized directly from surface of leaf litter or, more



frequently, from beneath leaves or from inside curled dead leaves by probing with the bill. Seems not to flip leaves routinely. Also frequently probes moss at base of tree trunks and on fallen logs, and occasionally reaches or jumps up to glean prey from undersides of overhanging leaves.

**Breeding.** Almost nothing known. In Venezuela (Cerro de la Neblina), gonads of a male moderately developed and those of a female small in Feb; in Brazil (São Gabriel da Cachoeira), not vocal in Aug but more vocal in Jan.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Orinoco-Negro White-sand Forests EBA. For long was known only from old specimens, and only recently rediscovered. Status imperfectly known, but appears to be uncommon to fairly common within its restricted habitats and small range; these remain among the least affected by human activity within South America. More basic research is needed in order better to assess its habitat requirements. Establishment of reserves that encompass a variety of the unique sandy-soil forests that characterize upper R Negro region would benefit several poorly known birds, including this species. A recently discovered population in C Caquetá suggests that its range in E Colombia may be much more extensive than previously realized.

**Bibliography.** Álvarez (2003), Cory & Hellmayr (1924), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Pearman (1994b), Ridgely & Tudor (1994), Sick (1993), Stotz *et al.* (1996), Willard *et al.* (1991), Zimmer (2003a).

## 182. Southern Chestnut-tailed Antbird

### *Myrmeciza hemimelaena*

**French:** Alapi rougequeue

**Spanish:** Hormiguero Colicastaño Sureño

**German:** Südlicher Rotschwanz-Ameisenvogel

**Other common names:** Chestnut-tailed Antbird (when treated as conspecific with *M. castanea*)

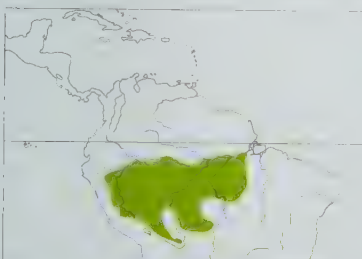
**Taxonomy.** *Myrmeciza hemimelaena* P. L. Sclater, 1857, Mapiro, La Paz, Bolivia.

Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Closely related to *M. castanea*, until recently considered conspecific but differing mainly in voice. Two subspecies recognized.

**Subspecies and Distribution.**

*M. h. hemimelaena* P. L. Sclater, 1857 - E Peru (S of R Marañón and R Amazon), SW Amazonian Brazil (E to R Madeira, S to Acre) and NW Bolivia W of R Mamoré and R Grande (Pando, La Paz, W Beni, Cochabamba, W Santa Cruz).

*M. h. pallens* Berlepsch & Hellmayr, 1905 - C Brazil S of R Amazon (R Madeira E to SW Pará, S to Rondônia and W & N Mato Grosso) and NE Bolivia (E Santa Cruz).



**Descriptive notes.** 11-12 cm; 14.5-16.5 g. Male has crown and head side to upper mantle grey with black feather centres, rest of upperparts dark yellowish red-brown, interscapular patch white, feathers with subapical black spots; remiges and tail as back, tertials tipped whitish; wing-coverts black with large white to buff-white tips; throat and upper breast black, black sometimes extending to upper belly, centre of belly white to grey (varying geographically), lower underparts yellowish red-brown; underwing-coverts patchily black and white; bill black. Female is like male, except grey of crown tinged brown, throat and

breast reddish yellow-brown, belly pale reddish yellow-brown to white (varying geographically in accordance with darkness of male belly), posterior underparts paler than male; lower mandible pale. Race *pallens* male has white on belly more extensive, female is paler than nominate. **VOICE.** Loudsong a series of whistles (e.g. 8 notes, 1-6 seconds), begins with abrupt flat notes, these speeding up and becoming downslurred while dropping in pitch, usually ending with 1-2 harsh notes. Calls include short (e.g. 0-15 seconds) downslurred, frequency-modulated "chirr" and abrupt "chak" or "pit" notes, often repeated in series of 2-4.

**Habitat.** Understorey and floor of lowland and foothill evergreen forest, from sea-level to 1350 m. Primarily in upland *terra firme* forest and adjacent tall second growth, but common in SE Peru in transitional forest and occurs locally in seasonally flooded forest. In Brazil, occupies mostly forest light-gaps overgrown with bamboo (*Guadua*), *Heliconia* or other large-leaved herbaceous plants near Alta Floresta (in Mato Grosso); conversely, in SE Peru tended to avoid areas of bamboo and *Heliconia* in river-edge forest, preferring habitats with moderately high density of small-stemmed trees. In NE Peru, replaces *M. castanea* in areas of lush, high-canopy forest.

**Food and Feeding.** Feeds on various insects, including orthopterans, hemipterans, lepidopteran larvae; probably also on other arthropods, including spiders. Closely associated pair-members, individuals, or family groups forage mostly just above or on the ground, to 1.5 m, rarely higher; mean foraging height in 199 observations in SE Peru was 0.4 m. Typically apart from mixed-species flocks, but temporarily joins flocks moving through its territory. Progresses by short hops, also short, fluttery flights, mostly clambering about in tangles of fallen branches, treefalls, or among fallen stalks of bamboo, constantly dropping back to the ground and then hopping back up again; constantly flicks both wings and frequently twitches tail from side to side; often remains in one small patch of understorey for some time. Perch-gleans most prey from tops and bottoms of live leaves, stems, vines and branches by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; often leaps to ground from a low perch to attack prey, and hops on ground and makes short jump-gleans to take prey from undersides of overhanging leaves, vines or branches; frequently probes shallow leaf litter with its bill, although not seen to toss leaves. Of 97 observations in SE Peru, about two-thirds were perch-gleans and one-third involved leaps to glean items from substrates. Occasionally attends swarms of army ants (*Eciton burchelli*), but rarely lingers.

**Breeding.** Single nests found in Sept and Mar in NW Bolivia. Nest an open cup 10-15-12 cm in diameter, 6-7.5 cm high, made primarily from strips of palm leaf interwoven with dead leaves and rootlets, supported basally by a single curved *Geonoma* palm leaf, one of which was on a ledge of a bank and the other had fallen, nest sides attached to surrounding saplings, roots and other objects, placed 25-28 cm above ground. Clutch 2 eggs, creamy white with faint, thin, pink lengthwise

scrawls, densest on blunt end (others from Bolivia similar, with light copper-red scrawls and flecks, but eggs from Peru darker with dark purple-brown flecks that are almost black in places); nestling purplish-blue, without down.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout most of its range. This includes several large formally protected areas, e.g. Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, Cristalino State Park, in Brazil, and Madidi National Park, in Bolivia; also extensive areas of intact habitat which, although not formally protected, appear to be at little risk of development in near term.

**Bibliography.** Álvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Bates (2000, 2002), Cory & Hellmayr (1924), Cox *et al.* (1992), Foster *et al.* (1994), Hennessey (2002), Isler, M.L. & Isler (2003a), Isler, M.L. *et al.* (2002), Isler, P.R. & Whitney (2002), Johns (1991), Killen & Schulenberg (1998), Marra (1989), Marra & Remsen (1997), Niethammer (1956), O'Neill (1974), O'Neill & Pearson (1974), Parker (2003a), Parker & Bailey (1991), Pearson (1971), Perry *et al.* (1997), Remsen (1986, 2003b), Remsen & Parker (1984), Remsen *et al.* (1986), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Schönwetter & Meise (1967), Servat (1996), Sick (1993), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Taczanowski (1884), Terborgh & Weske (1969), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Willis (1985b, 1988b), Zimmer, J.T. (1932d), Zimmer, K.J. (2003a), Zimmer, K.J., Parker *et al.* (1997).

## 183. Northern Chestnut-tailed Antbird

### *Myrmeciza castanea*

**French:** Alapi de Zimmer

**Spanish:** Hormiguero Colicastaño Norteño

**German:** Nördlicher Rotschwanz-Ameisenvogel

**Other common names:** Chestnut-tailed Antbird (when treated as conspecific with *M. hemimelaena*)

**Taxonomy.** *Myrmeciza hemimelaena castanea* J. T. Zimmer, 1932, Rio Negro, 2600 feet [c. 790 m], San Martín, Peru.

Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Closely related to *M. hemimelaena* and until very recently considered conspecific, but differs in, particularly, voice. Racial identity of N populations in S Colombia (Putumayo) and at lower elevations in E Ecuador (Napó) uncertain, but probably belong to *centuncularum*. Two subspecies recognized.

**Subspecies and Distribution.**

*M. c. centuncularum* Isler *et al.*, 2002 - extreme S Colombia (Putumayo), E Ecuador (Napó, Pastaza) and NE Peru (Loreto).

*M. c. castanea* J. T. Zimmer, 1932 - SE Ecuador (Zamora-Chinchipe) and N Peru (San Martín).



**Descriptive notes.** 11-12 cm; 16-17 g. Male has crown and head side grey with darker feather centres, hindcrown to upper mantle browner, rest of upperparts dark yellowish red-brown, interscapular patch white with subapical black spots on feathers; remiges and tail as back, tertials with or without indistinct pale tips; wing-coverts black, large white to buff-white tips; throat and upper breast black, black extending patchily to belly side, central belly white, rear underparts yellowish red-brown; underwing-coverts patchily black and white. Female differs from male in being somewhat paler above, throat and underparts reddish yellow-brown with contrasting white belly centre; differs from pale form of *M. hemimelaena* by black mandible, pale tertial tips absent or indistinct, and greater contrast between breast and white centre of belly. Race *centuncularum* male is more extensively white below with paler posterior underparts, more uniformly grey crown, female is paler than nominate. **VOICE.** Loudsong a series (e.g. 7 notes, 1-4 seconds) beginning with long, sharp whistles, notes shorten greatly in length while rising in pitch, abrupt final note drops in pitch. Calls include extended (e.g. 0-56 seconds) downslurred, frequency-modulated "chirr", also abrupt "chak" notes often repeated in triplets or longer series.

**Habitat.** Understorey and floor of lowland and foothill evergreen forest, at 125-1350 m; race *centuncularum* at lower elevations. Apparently restricted to forest types growing on poor-quality, sandy soils. Nominate race occurs in semi-stunted forest (canopy height 20-30 m) on poor soils in Andean foothills; replaced at similar elevations in same region by *M. hemimelaena* wherever higher-quality soils support lush, taller-canopy forest. Habitat of *centuncularum* known with certainty only in region N of R Marañón in N Peru and adjacent Ecuador, where it occurs in patchily distributed lowland forest growing on nutrient-poor podzolic and quartzitic soils; Peruvian names for these habitats are "irapayal" (canopy height over 40 m, understorey dominated by *Lepidocaryum temue* palms 2-3 m tall) and "varillal" (more stunted forest on purer white-sand soil).

**Food and Feeding.** Nothing published. Presumed to feed on insects and other arthropods. Closely associated partners, individuals, or family groups forage mostly 0-1 m above ground, away from mixed-species flocks. Foraging behaviour probably similar to that of *M. hemimelaena*.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Little known. Only very recently separated as a full species; conservation status requires assessment. Nominate race has extremely limited range, within a region that is under intense human pressure for cultivation of coca, coffee and other crops, as well as exploitation of forest for firewood and human settlement; same factors threaten another thamnophilid also largely restricted to this region, *Herpsilochmus parkeri*, which is classified as Endangered. Lowland subspecies *centuncularum* is less geographically restricted but has patchy distribution, and its known *varillal* and *irapayal* habitats are under intense human pressure. In 1999, Peruvian government took an important step in preserving the threatened white-sand habitats of N Amazonian Peru by establishing the Allpahuayo-Mishana Reserved Zone (57,600 ha); continued protection of this zone is critical to sustaining adequate populations of present species, as well as of several other highly specialized birds with small ranges.

**Bibliography.** Best *et al.* (1997), Butler (1979), Isler, M.L. *et al.* (2002), Isler, P.R. & Whitney (2002), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Taylor (1995), Zimmer (1932d).







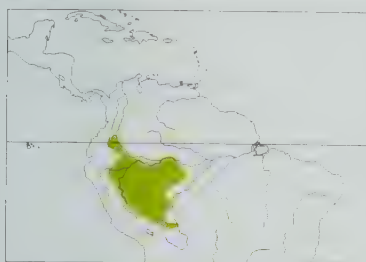
## 184. Plumbeous Antbird

*Myrmeciza hyperythra*

French: Alapi plombé German: Bleigrauer Ameisenvogel Spanish: Hormiguero Plomizo

**Taxonomy.** *Thamnophilus hyperythrus* P. L. Selater, 1855, Chamicuro, Loreto, Peru. Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Present species and *M. goeldii*, *M. melanoceps*, *M. fortis* and *M. immaculata* often considered to form a species group on basis of large size, but more work needed in order to confirm a close relationship. Monotypic.

**Distribution.** S Colombia (Caquetá), NE Ecuador (Napo, Sucumbios), E Peru (Loreto S to Madre de Dios), SW Amazonian Brazil (E to R Purus drainage) and NW Bolivia (Pando, N La Paz, Beni).



**Descriptive notes.** 17 cm; 38–44 g. Bare periorbital skin extensive, light blue. Male is dark slaty grey; wings and tail blackish-grey, wing-coverts spotted white at tips; underwing-coverts blackish-grey. Female has upperparts like male; bright rufous below, tinged brown on flanks and crissum. VOICE. Loudsong a long (e.g. 3–5 seconds) rattling trill that accelerates throughout, and gains and then declines in intensity. Calls include deep, hollow, abrupt (e.g. 0–0.5 seconds) “whick”, singly or, more often, repeated rapidly in doublets in which first note more intense; also a triplet of similar-quality notes, and deep raspy rattles in which first note

longer and more intense.

**Habitat.** Understorey and floor of lowland evergreen forest, both seasonally flooded (*várzea*) and transitional; to 450 m, rarely to 750 m. Prefers shaded, more open interior of *várzea*, especially where small saplings and treefalls abundant; also around margins of oxbow lakes.

**Food and Feeding.** Little published. Feeds on various insects and other arthropods; also on snails. Recorded prey in Brazil included hemipterans, cicadas (Cicadidae), lepidopterans, beetles (Curculionidae), spiders, and snails (Gastropoda). Closely associated pair-members, individuals, or family groups forage mostly 0–3 m above ground, usually apart from mixed-species flocks; habitually pounds tail downwards while foraging. Seeks prey on leaves and branches in dense low vegetation such as vine tangles, bamboo, *Heliconia* thickets, saplings and palmettos; examines bark of rotting logs and fallen palm fronds; frequently forages on the ground, probing in leaf litter, and regularly hopping up to low perches (often clings laterally to slender vertical stems) to scan for prey before hopping back down. Has been observed to search dead leaves systematically for hidden arthropods, but frequency of this behaviour not known. Prey usually perch-gleaned by reaching up, out or down with quick stabs of the bill. Observed to pick large larvae 5–8 cm long from fallen tree trunks; in order to consume these, pecked off pieces a third the size of the bill, sometimes biting pieces off ends. Occasionally follows army-ant swarms in pursuit of prey flushed by the ants.

**Breeding.** Single nests found in Mar (details previously unpublished) and Oct in SE Peru (Madre de Dios); nest-building seen once in Aug in Brazil (E bank of R Javari); gonadal condition of females and sightings of juveniles or fledglings indicate breeding in Apr–Dec in Ecuador (at Limoncocha). In Peru, nest a basket 16 cm long, 8 cm wide, 7.5 cm deep, made of black fern roots, dry leaves attached to exterior by spider web, one placed on and woven to two leaves of epiphytic fern c. 1 m above ground, other fern leaves covering it from above, another 0.7 m up and attached to spines of a *Bactris* palm; in Brazil, male gathered material from ground, made three consecutive trips in 5 minutes to same spot, incomplete nest a basket, internally 8 cm deep and 8.5 cm wide, woven entirely of blackish-brown rootlets, suspended 102 cm above ground (from bottom of nest) between two spiny understorey palms and partially supported by third, smaller palm. At Peru nest in Mar: clutch 2 eggs, pinkish, heavily streaked purple in a band; only male seen incubating, but female observed around nest.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout most of its range. Regions occupied by this species contain several formally protected large areas, e.g. Cuyabeno Reserve, in Ecuador, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, Madidi National Park, in Bolivia, and Mamirauá Reserve, in Brazil, as well as privately owned properties centred around ecotourism lodges (e.g. La Selva and Sacha, in Ecuador, and Explorama, ACEER and Explornapo Lodges, in Peru). Species’ range also encompasses extensive areas of intact habitat which, although not formally protected, are at little risk of being developed in the near future.

**Bibliography.** Álvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Cory & Hellmayr (1924), Foster *et al.* (1994), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Johns (1991), Londoño (2003), Novaes (1958), O’Neill (1974), O’Neill & Pearson (1974), Pacheco (1995, 2003), Parker & Bailey (1991), Pearson (1975b), Remsen & Parker (1983), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson (1997), Robinson & Terborgh (1997), Rosenberg (1997), Schubart *et al.* (1965), Servat (1996), Sick (1993), Stotz *et al.* (1996), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Zimmer, J.T. (1932d), Zimmer, K.J. (2003a, 2003b).

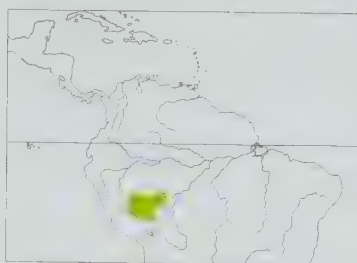
## 185. Goeldi’s Antbird

*Myrmeciza goeldii*

French: Alapi de Goeldi German: Goeldiameisenvogel Spanish: Hormiguero de Goeldi

**Taxonomy.** *Myrmelastes goeldii* Sneath, 1908, Bom Lugar and Porto Alegre, Amazonas, Brazil. Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Considered closely related to *M. melanoceps*, having similarities in morphology and voice, but differences in location of hidden white patches and possibly in nest architecture may indicate more distant relationship; they appear to be sympatric in Brazil along upper R Jurua (Acre). Both taxa and *M. hyperythra*, *M. fortis* and *M. immaculata* often thought to form a species group on basis of large size, but more work needed in order to confirm a close relationship among them. Monotypic.

**Distribution.** SW Amazonian Brazil (S Acre and adjacent SW Amazonas), SE Peru (S Ucayali, E Cuzco, Madre de Dios) and NW Bolivia (Pando, N La Paz).



**Descriptive notes.** 17 cm; 42 g. Interscapular patch white; bare periorbital area narrow, bluish-grey. Male has black plumage; iris red. Female has anterior crown, lores and side of head blackish-grey, rear crown, upperparts and wings rufous-brown, tail dark reddish-brown, throat white, underparts light cinnamon, becoming tawny on flanks and crissum; underwing-coverts cinnamon. VOICE. Loudsong a series (e.g. 12 notes, 3–4 seconds) beginning with 3 soft, rapidly delivered notes, first longer than second but shorter than third, followed by evenly paced series of downslurred whistles, notes shorter than intervals. Calls include long harsh note, and short

(e.g. 1 second) rattle with first note emphatic, then diminishing in intensity.

**Habitat.** Understorey and floor of evergreen forest (*várzea*, transitional) and river-edge forest, and *Guadua* bamboo thickets; to 450 m, rarely to 750 m. Prefers shrubby, vine-tangled edges of riverine and flooded forest, especially where dense stands of broad-leaved herbaceous plants such as *Heliconia*; also favours dense thickets of *Guadua* bamboo, both within floodplain of rivers and on upland shelves above floodplain.

**Food and Feeding.** Little published. Feeds on insects, probably also other arthropods, including spiders. Closely associated pair-members, individuals, or family groups forage mostly 0–2 m above ground, occasionally higher; usually apart from mixed-species flocks. Forages deliberately, moving by short hops, separated by pauses of 1–5 seconds to scan for prey. Pounds tail down and raises it slowly; also waggles it up and down slowly when singing, when delivering harsh notes drops tail sharply and leans over to expose interscapular patch. Perch-gleans most prey from leaf and stem surfaces, or from the ground, by reaching up, out or down with quick stabs of the bill. Occasionally, perhaps regularly, follows army-ant swarms (behaviour recorded in Peru and Brazil); near centre of a swarm observed to perch just off ground and to sally-pounce to attack prey.

**Breeding.** Aug–Nov in SE Peru; male carrying nesting material on 11th Dec in Brazil. Nest a cup of dried leaves and twigs c. 18 cm in diameter, placed on ground among dense undergrowth (e.g. bamboo and *Gynerium* cane), once several metres from edge of a lagoon; another reported as “near the ground”, but details lacking. Clutch 1–2 eggs, white with irregular reddish-brown blotches over entire surface; sexes share in incubation.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in South-east Peruvian Lowlands EBA. Fairly common throughout its range. Range encompasses some large protected areas, e.g. Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, Madidi National Park, in Bolivia, and Serra do Divisor National Park, in Brazil, as well as extensive intact habitat which is not formally protected but appears at little risk of development in near future. Continued protection of existing parks and reserves should ensure long-term viability of this species.

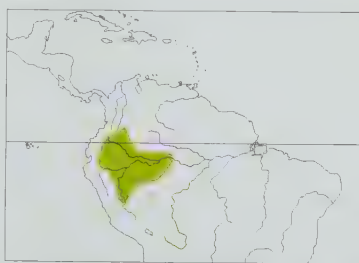
**Bibliography.** Alverson *et al.* (2000), Cory & Hellmayr (1924), Foster *et al.* (1994), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Kratter (1997a), Parker (1982, 2003a), Parker & Bailey (1991), Parker & Remsen (1987), Parker *et al.* (1991), Remsen (1986), Ridgely & Tudor (1994), Robbins (2003b), Robinson (1997), Robinson & Terborgh (1997), Servat (1996), Sick (1993), Stotz *et al.* (1996), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Whitney (2003a), Whittaker & Oren (1999), Wilkinson & Smith (1997).

## 186. White-shouldered Antbird

*Myrmeciza melanoceps*French: Alapi à épaules blanches Spanish: Hormiguero Hombroblanco  
German: Weißschulter-Ameisenvogel

**Taxonomy.** *Thamnophilus melanoceps* Spix, 1825, “in Sylvius Parae”; error = Rio Içá, Amazonas, Brazil. Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Considered closely related to *M. goeldii*, with similarities in morphology and voice, but differences in location of hidden white patches and possibly in nest architecture may indicate more distant relationship; the two appear to be sympatric in Brazil along upper R Jurua (Acre). Both species and *M. hyperythra*, *M. fortis* and *M. immaculata* often thought to form a species group on basis of large size, but more work needed in order to confirm a close relationship among them. Monotypic.

**Distribution.** SE Colombia (Meta, Caquetá, Putumayo, S Amazonas), E Ecuador, NE & EC Peru (Loreto, Amazonas, N Ucayali) and W Amazonian Brazil (E to R Japurá and to both banks of R Juruá).



**Descriptive notes.** 17 cm; 36–40 g. Bare periorbital area narrow, blue. Male is black; hidden white patch under scapulars; iris deep red. Female has head to upper mantle and upper breast black, remaining upperparts rufous, becoming darker brown near ends of wings and tail, underparts cinnamon-tawny, palest on centre of belly; underwing-coverts cinnamon-tawny. VOICE. Loudsong a short series (e.g. 7 notes, 2–1 seconds) that begins with 2 soft notes, first longer than second, followed by mostly flat notes that become more intense and lengthen slightly. Calls include short (e.g. 0–0.9 seconds) “chirp”; short (e.g. 1–8 seconds) rattle beginning with emphatic note, followed by evenly spaced notes; and slower, more melodic series of c. 6 notes that also starts with emphatic note.

**Habitat.** Understorey and floor of evergreen flooded forest (*várzea*), transitional forest, forest edge, and adjacent tall second-growth woodland; to 450 m, rarely to 600 m. Particularly favours immediate river edge and other shrubby, vine-tangled borders of forest, especially *várzea*.

**Food and Feeding.** Little published. Feeds on insects, probably also other arthropods; insect fragments and a seed found in stomachs. Closely associated pair-members, individuals, or family groups



forage mostly 0.5 m above ground, median foraging height in 18 observations 2 m; occasionally with mixed-species flocks, more often alone, and usually sticking to dense cover, where difficult to observe. Forages in thick vine tangles, dense mixed stands of saplings and low palms, and low shrubbery; takes short hops along branches, frequently stopping to look around; sally-strikes at prey from distances of 15–60 cm, also reaches out and flutters up to pick prey from leaf undersides. Often sits in one place for several minutes, regularly pounding tail rapidly downwards, then raising it slowly to just above plane of body. Occasionally follows army ants, recorded at swarms of *Eciton burchelli* in Colombia, Peru and Brazil; over ants, perches 0.2 m above ground, flying rapidly from one perch to another but waiting long periods at each perch; most attack manoeuvres were short sallies to the ground or to lianas, but also perch-gleans prey from those substrates.

**Breeding.** A nest found in Colombia (Meta) in Oct (details previously unpublished); gonadal condition of females and sightings of juveniles or fledglings indicate breeding in Jul–Feb in Ecuador (Limoncocha); pair observed allopreening while perched on log in Jan in N Peru. Single known nest was a deep cup with internal diameter 9 cm, depth 10 cm, woven from palm fibres and dead plant material, entrance partially covered with dead leaves that created a chamber, built 0.9 m up in dense, dead palm fibres between leaf rachides of *Oenocarpus* palm; contained 2 eggs, white, irregular purplish spots concentrated on larger end; both sexes incubated, period unknown, nestling period 10–11 days.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout its range. Regions inhabited by this species contain several large protected areas, e.g. Amacayacu and La Paya National Parks, in Colombia, Yasuni National Park, Limoncocha Biological Reserve and Cuyabeno Reserve, in Ecuador, Pacaya-Samiria National Reserve, in Peru, and Mamirauá Reserve, in Brazil; also some privately controlled areas managed for ecotourism, e.g. La Selva and Sacha Lodges, in Ecuador, and Explornapo, Explorama and ACEER Lodges, near Iquitos, in Peru. In addition, species' range encompasses extensive areas of intact habitat which, although not formally protected, appear unlikely to be threatened by development in the near future.

**Bibliography.** Alvarez (1994), Alverson *et al.* (2001), Cory & Hellmayr (1924), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Link & Ramirez (2003), Novas (1957b, 1958), O'Neill & Pearson (1974), Parker (2003a), Remsen & Parker (1983), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Sick (1993), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Willis (1985b), Zimmer (1932d).

## 187. Sooty Antbird

### *Myrmeciza fortis*

French: Alapi fuligineux

Spanish: Hormiguero Tiznado

German: Schwarzgrauer Ameisenvogel

**Taxonomy.** *Percnostola fortis* P. L. Selater & Salvin, 1868. Pebas and Chayahuitas, Loreto, Peru. Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. May form a superspecies with *M. immaculata*. The two, along with *M. hyperythra*, *M. goeldii* and *M. melanocephala*, are often considered to form a species group on basis of large size, but more work needed in order to confirm that they are all closely related. Race *incanescens* doubtfully distinct; alleged darker lower mandible based on incorrect statement that this was yellow in nominate race. Two subspecies recognized.

#### Subspecies and Distribution.

*M. i. fortis* (P. L. Selater & Salvin, 1868) - S Colombia (extreme E Cauca, extreme E Nariño, SW Caquetá, Putumayo, S Amazonas), E Ecuador, E Peru, W Amazonian Brazil (S of R Amazon, W of R Madeira) and NW Bolivia (Pando and La Paz W of R Beni).

*M. i. incanescens* (Todd, 1927) - Tonantins, on R Solimões, in Brazil.

**Descriptive notes.** 17 cm; 42–48 g. Bare periorbital area wide, light blue. Male is very dark grey, blackest on head, wings tinged brown; white line around bend of wing; iris red. Female has crown rufous-chestnut, bordered blackish, upperparts greyish olive-brown, becoming reddish yellow-brown posteriorly, wings rufous, tail dark brown; lores, head side, throat and underparts grey, palest on throat, tinged tawny on flanks and crissum; underwing-coverts grey. Subadult male resembles female, but generally darker and greyer, crown blackish-grey. Race *incanescens* is said to have greyer back than nominate.

**VOICE.** Loudsong a series of similar, resonant, slightly downslurred whistles (e.g. 11 notes, 2.8 seconds) on same pitch, first note less intense, notes shorten slightly. Call a short (e.g. 0.14 seconds), clear, downslurred whistle; rattle (c. 1 second long) drops slightly in pitch and intensity.

**Habitat.** Understorey and floor of lowland and foothill evergreen forest and adjacent mature second-growth woodland; mostly below 900 m, rarely to 1200 m. Primarily in upland *terra firme* forest; less commonly in transitional forest or, even more rarely, in várzea. Typically in areas of rather dense undergrowth, often near streams or vine-tangled treefalls.

**Food and Feeding.** Feeds on variety of insects and other arthropods, many of which obtained when flushed by army-ant swarms. Recorded prey in Brazil include katyids (Tettigoniidae), beetles (Coleoptera), spiders; other prey include ant larvae (Formicidae), cockroaches (Blattidae), grasshoppers (Acrididae), stick-insects (Phasmatidae). In analysis of 12 stomachs (501 items) from a site in Bolivia, commonest prey types were Orthoptera, followed by Coleoptera, Hymenoptera (almost exclusively ants) and spiders. Pair-members, individuals, or family groups forage mostly on the ground or within 1 m of it, occasionally to 2 m; does not associate with mixed-species flocks. Considered a regular follower of army ants (mostly *Eciton burchelli*, also *Labidus praedator*), frequently staying with a swarm for hours and waiting for dormant bivouacs to begin raiding; ant-following behaviour recorded in all countries of range except Bolivia; seldom more than 4 individuals attending any single swarm. Both at and away from ant swarms, mostly hops or waits on or close to ground; most above-ground perches are on logs, root buttresses, or slender (0.4 cm), mostly horizontal branches, although often perches on vertical saplings; typically hops on ground (c. 15 cm per jump) between perches, rather than flying. Regularly pounds tail emphatically downwards, then slowly raises it to just above plane of body. Most attack manoeuvres over ants are short (less than 0.5 m) sallies or sally-pounces to the ground; also perch-gleans prey from ground by reaching with a quick stab of the bill, or by a short horizontal lunge; actively digs into leaf litter or tosses dead leaves to uncover prey; less frequently sallies to lianas, trunks and foliage, or perch-gleans from these by reaching out, up or down. Holds positions in the most productive centres of ant swarms, aggressively supplanting or displacing most smaller obligate ant-followers (including *Pithys albifrons*, *Gymnophthys leucaspis*, *G. humilatus* and *G. salvini*, *Rhagmatorhina melanosticta*,

*Hylophylax poecilinotus*), snaps bill and raises crest in aggressive interactions; is usually subordinate at swarms to *Phlegopsis erythroptera* and to the much larger Rufous-vented Ground-cuckoo (*Neomorphus geoffroyi*); intraspecific aggression common and noisy and, if more than one pair attending a swarm, the "extra" birds usually forage at far end, away from dominant pair.

**Breeding.** Not well known. Two nests in SE Peru (Madre de Dios) in Sept–Oct; gonadal condition of females and sightings of fledglings or juveniles indicate season at least Oct–Apr in Ecuador; fledglings accompanied by adults in May in Colombia (Putumayo) and N Peru (Loreto); on basis of seasonal spread and moult condition of juvenile-plumaged specimens, breeding season speculated as being long, possibly extending throughout year. Nest domed, consisting of spherical chamber with short horizontal entrance tunnel, interior chamber neatly lined with interwoven plant fibres (either thin strips torn from margins of palm leaves and grass blades, or the thread-like "reins" that are shed from leaflets of palm, some fibres still green); spherical chamber of one nest 6–7 cm in diameter, of the other 5.2 cm deep, 3.8 cm high and 4 cm wide, entrance tunnel of first nest 2–3 cm deep, 4 cm high and 5 cm wide, of second 3–6 cm deep, 3.4 cm high and 3–6 cm wide; both concealed in leaf litter on forest floor, one in small mound of litter (25 cm high, 30 cm across) between low buttresses of mid-canopy tree, the other in mound (50 cm high, 27 cm diameter) with surface sloping up at 45-degree angle. Clutch at both nests 2 eggs, described as creamy white, with dark brown or maroon scrawls concentrated towards larger end; incubation by both parents, period not determined; nestling period at one nest was 9 days from hatching.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout most of its range. Regions in which it occurs include a number of large protected areas, e.g. Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, Serra do Divisor National Park, in Brazil, and Madidi National Park, in Bolivia; also extensive intact habitat which is not formally protected, but seems at little risk of development in near term.

**Bibliography.** Alvarez (1994), Alverson *et al.* (2001), Chesser (1995), Cory & Hellmayr (1924), Foster *et al.* (1994), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), O'Neill (1974), Parker & Bailey (1991), Parker & Remsen (1987), Parker *et al.* (1991), Remsen (1986), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schubart *et al.* (1965), Servat (1996), Sick (1993), Stotz *et al.* (1996), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Wilkinson & Smith (1997), Willis (1979c, 1985b), Willis & Oniki (1978), Zimmer, J.T. (1932d), Zimmer, K.J. (2003a).

## 188. Immaculate Antbird

### *Myrmeciza immaculata*

French: Alapi immaculé

German: Schwarzer Ameisenvogel

Spanish: Hormiguero Inmaculado

**Taxonomy.** *Thamnophilus immaculatus* Lafresnaye, 1845, "Bogotá" trade skins, Colombia.

Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. May form a superspecies with *M. fortis*. The two, along with *M. hyperythra*, *M. goeldii* and *M. melanocephala*, are often considered to form a species group on basis of large size, but more work needed in order to confirm a close relationship among them. Birds from E Panama S to W Ecuador (*macrorhyncha*) originally described as race *berlepschi*, but that name rendered invalid when *M. berlepschi* (previously placed in genus *Sipia*) was returned to current genus. Four subspecies recognized.

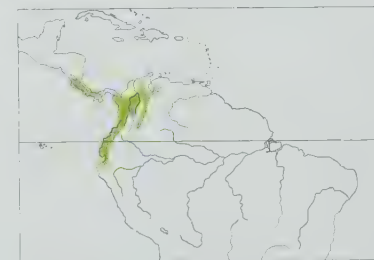
#### Subspecies and Distribution.

*M. i. zeledoni* Ridgway, 1909 - extreme S Nicaragua (San Juan) S to W Panama (Bocas del Toro, Chiriquí, Coclé, Veraguas).

*M. i. macrorhyncha* Robbins & Ridgely, 1993 - E Panama (E Darién), Pacific slope in Colombia and W Ecuador.

*M. i. brunnea* Phelps, Sr. & Phelps, Jr., 1955 - extreme NW Venezuela (Sierra de Perijá).

*M. i. immaculata* (Lafresnaye, 1845) - locally in C & E Andes of Colombia and W Venezuela (Lara, Mérida, Táchira).



**Descriptive notes.** 18 cm; 38–43 g. Bare periorbital area wide, light blue. Male is black; concealed anterior lesser wing-coverts and line around bend of wing white; underwing-coverts blackish-grey; iris deep red. Female nominate race has forehead, side of head, chin and upper throat blackish, tail blackish, otherwise plumage dark reddish-brown, slightly paler and greyer below, underwing-coverts blackish-brown. Races differ from nominate in female plumage tone, but differences minimal: *macrorhyncha* is brighter brown; *zeledoni* is slightly darker brown; *brunnea* has upperparts duller brown, underparts more olivaceous.

**VOICE.** Loudsong a series of rather long, evenly paced, slightly downslurred whistles (e.g. 5 notes, 2–3 seconds) on same pitch, first note less intense, notes shorten slightly; races *zeledoni* and *macrorhyncha* faster-paced, notes shorter (e.g. 9 notes, 2.9 seconds). Call a short (e.g. 0.12 seconds) "tweet" rising and falling in pitch; rattle (c. 1 second long) slows down; both call and rattle high-pitched (4.4–5 kHz) for size of species.

**Habitat.** Understorey of humid evergreen forest, forest borders and older second growth, from lowlands to, locally, 2300 m. Primarily in wet forested foothills, occupying steep hillsides and ravines where landslides have created light-gaps and resulting lush second growth. In Costa Rica, found at c. 300–1700 m on Caribbean slope but mostly above 900 m on Pacific Slope; mostly 550–1300 m in Panama; 100–1500 m on Pacific Slope in Colombia, but at 400–2000 m farther E in Andes to Venezuela, where occurs only above 900 m.

**Food and Feeding.** Feeds on variety of arthropods; also on small lizards and frogs. Recorded prey in Costa Rica and Panama include grasshoppers (Acrididae), katyids (Tettigoniidae), crickets (Gryllidae), cockroaches (Blattidae), beetles (Coleoptera), earwigs (Dermaptera), true bugs (Heteroptera), cicada nymphs (Cicadidae), spiders (Araneae), scorpions (Scorpiones), millipedes (Diplopoda), small lizards, and frogs. Pair-members, individuals, or family groups forage mostly 0–1 m above ground, apart from mixed-species flocks. Leapfrogs through undergrowth, progressing by wing-assisted hops; while foraging, habitually pounds tail downwards rapidly to c. 60 degrees below horizontal, then raises it slowly to just above plane of body. Perch-gleans arthropods from leaf, stem and branch surfaces, by reaching up, out or down with quick stabs of the bill or by short horizontal lunges; also routinely rummages in leaf litter on ground or in arboreal litter lodged in vine tangles and other vegetation. Regularly follows army ants (mostly *Eciton burchelli*, occasionally *Labidus praedator*), using slender, horizontal perches less than 1 m above the swarm and



pouncing on fleeing arthropods below; most attack manoeuvres at swarms are short sallies or sally-pounces to the ground, or direct gleans from ground while hopping between columns of ants. Ten or more individuals may congregate at such swarms; at upper end of elevational range is often numerically dominant species in attendance, and usually the only thamnophilid; noted as displacing *Gymnophythys leucaspis* at swarms, but supplanted or displaced by both *Phaenostictus mcleannani* and Rufous-crowned Antpitta (*Pittasoma rufipileatum*).

**Breeding.** Little known. Fledglings reported in Jun-Jul in Costa Rica (Braulio Carrillo), and dependent juveniles noted in Feb and Apr in Colombia (Valle).

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Status not well known; seemingly uncommon throughout most of its rather extensive range. Regions occupied by this species include a number of protected parks and reserves, e.g. Braulio Carrillo and Tapanti National Parks, La Amistad International Park, and La Selva Biological Reserve, in Costa Rica, and Cerro Hoya and Darién National Parks, La Fortuna Water Production Reserve and Fortuna Forest Reserve, in Panama; also extensive intact habitat that is not formally protected. This species has undoubtedly declined in many areas as a result of rampant deforestation of the foothill zone that it occupies. Most suitable habitat in Costa Rica and Panama has already been destroyed; more unprotected habitat exists in Colombia, Ecuador and Venezuela, but much of this has no long-term security.

**Bibliography.** Buskirk (1976), Cory & Hellmayr (1924), Hilty (1974, 1997, 2003a), Hilty & Brown (1986), Isler, M.L. & Whitney (2002), Isler, P.R. & Whitney (2002), Olivares (1958), Parker & Carr (1992), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robbins & Ridgely (1993), Salaman, Donegan & Cuervo (2002), Skutch (1977), Slud (1960, 1964), Stiles & Skutch (1989), Stotz *et al.* (1996), Vally (2001), Wetmore (1972), Willis (1985b), Willis & Oniki (1978), Zimmer (2003a)

## 189. Black-throated Antbird

### *Myrmeciza atrothorax*

**French:** Alapi de Buffon

**Spanish:** Hormiguero Gorginegro

**German:** Braunscheitel-Ameisenvogel

**Other common names:** Spot-breasted Antbird ("stictothorax")

**Taxonomy.** *Formicarius attothorax* [sic] Boddaert, 1783, Cayenne, French Guiana.

Genus appears not to represent a monophyletic grouping, but traditional arrangement maintained pending further phylogenetic study. Affinities uncertain; possibly not closely related to other members of genus. Taxon named as *stictothorax* (lower R Tapajós, in Brazil) considered a separate species by some authors and a race of present species by others, but recordings and specimens obtained near type locality suggest that it is a plumage variant of race *melanura*. Further, described races *obscurata* (E Peru, W Brazil) and *griseiventris* (W Bolivia) considered inseparable from latter, which itself highly variable; re-examination of populations S of R Amazon, employing other data (e.g. genetic) in addition to morphological studies, is required. Five subspecies recognized.

**Subspecies and Distribution.**

*M. a. metae* Meyer de Schauensee, 1947 - C Colombia (Meta, W Guaviare).

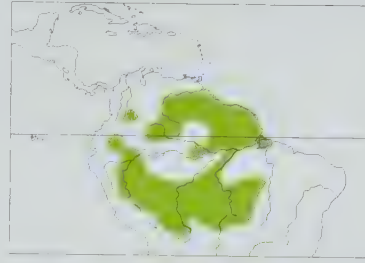
*M. a. atrothorax* (Boddaert, 1783) - S Venezuela (S Bolívar, Amazonas), extreme EC Colombia (Guainía, Vaupés), the Guianas and N Amazonian Brazil (both banks of upper and E of lower R Negro, E to Amapá).

*M. a. tenebrosa* J. T. Zimmer, 1932 - N of Amazon in E Ecuador (Napo, Pastaza), NE Peru (Loreto) and N Brazil (W of lower R Negro).

*M. a. maynana* Taczanowski, 1882 - NC Peru S of R Marañón (Loreto W of R Huallaga).

*M. a. melanura* (Ménétriés, 1835) - S of R Amazon in E Peru (E of R Huallaga), locally in W & C Brazil (upper regions of tributaries of R Amazon and along lower R Tapajós, and E to S Pará and SC Mato Grosso) and N & C Bolivia.

**Descriptive notes.** 13-14 cm; 14-18 g. Interseapular patch white. Male nominate race has crown and upperparts dark yellowish olive-brown, becoming blackish on rump; wing-coverts subterminally black, tipped white; tail blackish-grey; head side and underparts grey, centre of throat and breast black; underwing-coverts grey. Female differs from male in dull reddish yellow-brown crown and upperparts, dark brown wings, coverts tipped light buff, white chin and upper throat, remaining underparts cinnamon-rufous except flanks and crissum dark olive-brown; underwing-coverts yellowish olive-brown. Races vary in colour and darkness and plumage, and extent of black below on male: *metae* has black breast feathers edged grey, giving spotty appearance; *tenebrosa* is much darker above, wing-covert spots minute, male extensively black below, flanks and belly blackish-grey, female (said to be unknown, but old museum specimen recently located at AMNH) similar to nominate but darker all over; *maynana* male has upperparts sooty grey, faintly washed brownish; *melanura* differs from nominate in slender bill, more extensively grey forecrown and supercilium, olive or light russet-brown rump with sooty-grey uppertail-coverts, male belly paler, female belly



**Habitat.** Understorey of evergreen-forest edge (*terra firme*, transitional, *várzea*/igapó), second-growth woodland, and river-edge forest; mostly below 500 m, up to 1200 m in tepui region of Venezuela, and even on occasion up to 1600 m. Very much an edge species, occupying rank, grassy borders of primary and secondary forest, swampy thickets at water's edge along forested rivers, and large, regenerating light-gaps within *terra firme* forest. In upper R Negro-R Orinoco region occupies stunted savanna woodland growing on white-sand soils, primarily in humid, shrubby forest borders and swampy, low-lying thickets of broad-leaved herbaceous plants in forest interior. In foothills in Peru found along forest edge on ridgetops; in lowlands of SE Peru and N Bolivia commonly in "zabala" riverbank forest characterized by such trees as *Cecropia*, *Ochroma* and *Erythrina*, with undergrowth of *Gynerium* cane, *Guadua* bamboo and broad-leaved plants (including *Heliconia* and *Costus*), but also occurs along road edges and in second growth.

**Food and Feeding.** Feeds on various insects and spiders, probably also on other arthropods; frog fed to nestling. Recorded prey in Brazil include termites (Termitidae), beetles (Elateridae, Curculionidae), hemipterans (Pentatomidae), craneflies (Tipulidae), orthopteran egg cases; in Surinam beetles, katydids (Tettigoniidae), larvae of owlflies (Neuroptera: Ascalaphidae), spiders. Closely associated pair-members, individuals, or family groups forage mostly 0-1 m above ground, occasionally to 3 m, apart from mixed-species flocks; pairs and family groups are typically very vocal when foraging, keeping in close contact by frequent loud calls. Somewhat terrestrial, progressing by short hops on ground, and frequently jumping up to low perches to scan before dropping back down, but sometimes moves through an area on vertical stem perches a few centimetres off ground; generally sticks to dense (often herbaceous/grassy) cover, and tends to flutter quickly across even small open gaps; constantly lowers tail slowly to 45 degrees or more below level of body, then flicks it rapidly upwards to as much as 20 degrees above horizontal, also habitually flicks both wings shallowly. Perch-gleans most prey from tops and bottoms of live leaves, branches, stems, vines, grass blades or the ground by reaching up, out or down with quick stabs of the bill, or by short horizontal lunges; makes short, fluttering jump-lunges to take prey from underside of overhanging vegetation; probes noisily in leaf litter with its bill, but not seen to toss leaves. Rarely attends swarms of army ants.

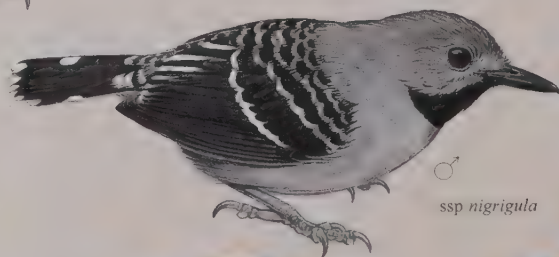
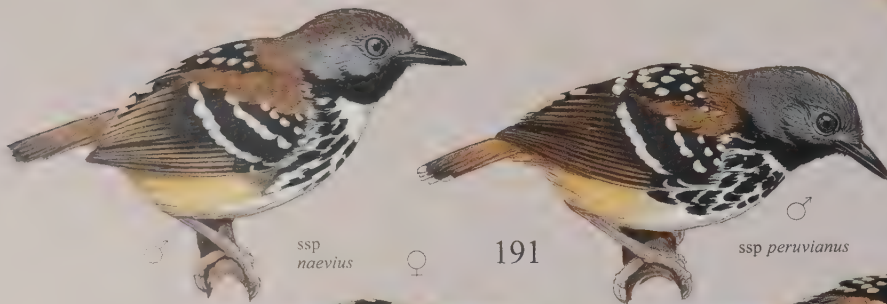
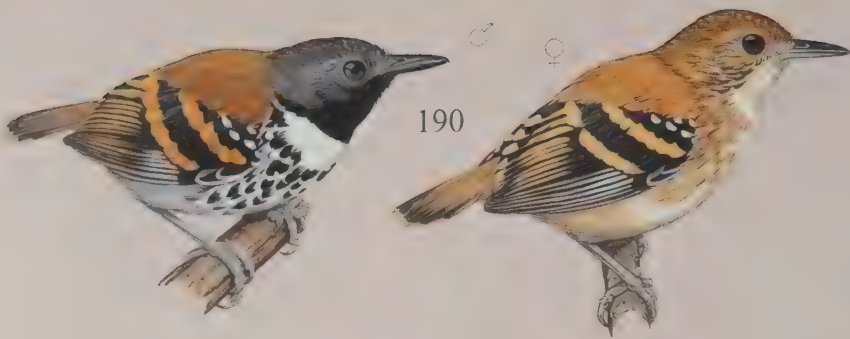
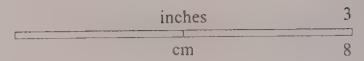
**Breeding.** Nest found in Apr in French Guiana (details previously unpublished); adult carrying nest material in Jul in S Peru; fledgling seen in Dec in Brazil (Mato Grosso). Nest a cup constructed from dead leaves of sedges and some broader leaves, lined with *Marasmius* fibres, built c. 20 cm over water in large clump of sedge (periphery of clump and the surrounding sedges and trees flooded); contained only 1 nestling, fed by both parents with insects and one small frog, fledged the day after nest discovered. Eggs from Bolivia said to be like those of *M. squamosa* but darker and more heavily marked.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout its extensive range. Numerous formally protected areas exist within regions occupied by this species, and in virtually every country in which it occurs. Its ability to occupy a variety of secondary and edge habitats renders it less vulnerable to disturbance than are most other thamnophilids.

**Bibliography.** Alvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Cory & Hellmayr (1924), Cox *et al.* (1992), Davis (1993), Deville & Tostain (2003), Dick *et al.* (1984), Foster *et al.* (1994), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler, M.L. & Isler (2003a), Isler, P.R. & Whitney (2002), Killeen & Schulenberg (1998), Moskovits *et al.* (1985), O'Neill (1974), O'Neill & Pearson (1974), Parker (2003a, 2003b), Parker & Bailey (1991), Remsen (1986), Remsen & Parker (1983), Reynaud (1998), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Schönewetter & Meise (1967), Schubart *et al.* (1965), Schulenberg & Stotz (1991), Servat (1996), Sick (1993, 1995), da Silva & Oniki (1988), Snethlage (1913), Snyder (1966), Stotz & Bierregaard (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer & Bierregaard (1995), Tallman & Tallman (1994), Teixeira *et al.* (1994), Terborgh *et al.* (1984), Thiollay (1992), Tostain (1986a), Tostain *et al.* (1992), Willard *et al.* (1991), Willis (1985a, 1988b), Zimmer, J.T. (1932d), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997).







# Genus *HYLOPHYLAX* Ridgway, 1909

## 190. Spotted Antbird

### *Hylophylax naevioides*

French: Fourmilier grivelé

Spanish: Hormiguero Moteado

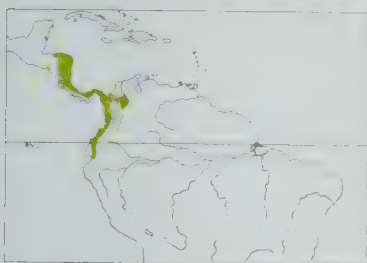
German: Rotmantel-Ameisenwächter

**Taxonomy.** *Conopophaga naevioides* Lafresnaye, 1847, no locality = Ciudad de Panamá, Panama. Close relationship with *H. naevius* and *H. punctulatus* suggested by morphology, vocalizations and nest architecture. Birds from W Colombian lowlands described as race *subsimilis*, but considered inseparable from nominate. Two subspecies recognized.

#### Subspecies and Distribution

*H. n. capnitis* (Bangs, 1906) - Caribbean slope from Honduras S to Costa Rica (ranging to Pacific slope in NW) and W Panama (E to Coelá, ranging to Pacific slope in Veraguas).

*H. n. naevioides* (Lafresnaye, 1847) - E Panama (both slopes E from Colón and Panamá), N & W Colombia (E to César & Santander on N slope) and W Ecuador (S to Guayas and Chimborazo).



**Descriptive notes.** 10.5-11.5 cm; 15.5-18.5 g. Interscapular patch white. Male has crown to below eye grey, dark grey feather centres; upperparts rufous; flight-feathers dark brown, edged buff, black basally; wing-coverts and tertials black with large rufous tips (forming wingbars on coverts), lesser coverts tipped white; tail dark yellowish-brown, subterminally black, tip rufous-tinged white; throat black, white below, band of black spots across breast and down sides, lower underparts tinged buffy grey; underwing-coverts pale grey. Female has crown dark yellowish-brown, upperparts, wings and tail patterned as male but duller, wingbars

paler, head side mottled greyish-brown and buff, throat white, variably tinged buff, underparts patterned as male but tinged buff, with spots olive-grey. Juvenile is like female but lacks interscapular patch. Race *capnitis* is darker than nominate, especially on flanks, male tail with less colour contrast at tip. Voice. Male loudsong a long series (e.g. 19 notes, 4.5 seconds) typically beginning with lengthy (e.g. 0.45 seconds), mostly upslurred note followed by doublets that consist of abrupt note and much longer note, notes are frequency-modulated and raspy, doublets drop noticeably in pitch, and intensity usually increases at beginning and decreases at end; typical female loudsong shorter than male's. Calls include short, mostly upslurred "chip" notes, often in groups of 2-4, and high-pitched short (e.g. 0.35 seconds) rattle, declining in pitch and intensity.

**Habitat.** Understorey of humid lowland and foothill evergreen forest and adjacent mature second-growth woodland, generally up to 900 m, though recorded up to 1100 m.

**Food and Feeding.** Feeds on various insects and other arthropods; also small lizards. Recorded prey include cockroaches (Blattidae), orthopterans, beetles (Coleoptera), moths and caterpillars (Lepidoptera), sow bugs (Isopoda), ants (Formicidae), spiders and their egg sacs, centipedes (Chilopoda), scorpions (Scorpiones), bristletails (Thysanura), and small *Anolis* lizards. Most prey taken are less than 14 mm in length; larger prey are mandibulated and/or beaten against branches, or sometimes dissected. Pair-members, individuals, or family groups forage mostly 0.2 m above ground; often alone, but regularly with mixed-species understorey flocks, and frequently in vicinity of other species at swarms of army ants. Regularly follows swarms of *Eciton burchelli* and *Labidus praedator* to seize prey flushed by them, but just as frequently forages away from ants. Early in morning often cruises about while searching for army-ant swarms; if none found, it settles down to foraging away from ants; investigates songs of other ant-following species, also regularly monitors inactive stately bivouacs within its territory for signs of activity. Cruising individual flies up to 20 m at a time, 1-2 m above ground, pausing to cling laterally (top leg flexed, bottom leg extended) to slender vertical stems, from which it often swings (pitches) around, scanning for prey, before moving on; regularly flicks tail upwards quickly to just above plane of body, then lowers it more slowly. Usually selects nearly vertical or nearly horizontal slender (less than 3 cm) perches within 1 m of ground, pausing for long periods to scan; in one observation of birds foraging uninterrupted, average length of 28 intervals between foraging attempts was 111.8 seconds (range 8-283 seconds). Most frequent attack manoeuvres are rapid sallies to the ground, or to foliage, vines, branches or stems near ground, followed by brief fluttering capture of prey and a quick jump or flight back up to another perch; if prey takes refuge under leaf litter, the bird often stands on ground and tosses leaves with its bill until prey item is revealed; sallies to vegetation usually end in brief flutter or hover; sometimes also sallies to take flying prey. Estimated to take c. 50% of its food at ant swarms; in absence of competitors, forages over ants in much the same manner as when away from ants, but with more frequent pitches, reverses and changes of perch; in a study involving 1692 records of foraging height away from competitors, 91.4% were below 1 m and 64.5% below 0.4 m; in same study, average of 76 between-attack intervals for birds foraging at swarms away from dominant competitors was 32.3 seconds (compared with 111.8 seconds away from ants). Rarely more than one pair (or family) attending a single swarm, as resident pair normally drives away trespassers; subordinate to larger ant-following specialists, particularly *Gymnopithys leucaspis*, *Phaenostictus mcleannani* and Grey-headed Tanager (*Eucometis peticillata*), to which it cedes the active centre of swarms, being readily displaced to periphery; does supplant small non-specialists and migrants, such as Canada Warbler (*Wilsonia canadensis*).

**Breeding.** Season Apr-Jul in Costa Rica; nests with eggs in Apr-Oct in Panama. Nest, constructed by both sexes, a deep, thin-walled cup of fine dark fibres, often with bits of moss, dead leaves or twigs decorating outside, attached by rim to slender twigs or fork 0.3-1 m above ground in forest undergrowth; one nest was composed mostly of slender pistillate inflorescences of *Myriocarpa izabalensis* (Urticaceae) and included a few rhizomorphs; of 120 nests located in one study, height above ground was 0.3-1.7 m, with mean height of 115 of these 0.78 m. Normal clutch 2 eggs, whitish, heavily blotched and speckled all over with chocolate-brown or chestnut (larger marks often more longitudinal), laid 1-2 days apart; incubation by female at night, male usually relieves her shortly after dawn and takes long morning shift, daytime incubation nearly evenly divided between sexes; incubation period 15-16 days (from completion of clutch), mean for 8 nests in Panama 17.9 days (calculated from

day first egg laid until day first egg hatched); parents share in brooding and feeding chicks, only female broods at night, at most nests relatively little daytime brooding, particularly after first few days following hatching; on days 1-2 parents eat faecal sacs of chicks prior to brooding, from day 3 onwards carry sacs away from nest; nestling period 11-12 days, young leave nest when still unable to fly, hide in dense shrubbery or tangles; male feeds one fledgling and female tends the other; if a single fledgling, this typically fed by only one parent, most often the male; fledglings become independent 6-8 weeks after leaving nest; some pairs begin construction of second nest within 5-7 days of last fledgling achieving independence, in other cases even before previous brood fully independent; if nest lost, pair renests immediately (within 4 days in two cases). Nest predation high: in one study, 18 of 24 nests found before or during egg-laying were robbed before hatching, and 84 nests found at various stages and followed until success determined produced total of 16 broods leaving nest; in a 2-year study in Panama, nest success varied from 50% in one year to 38% in the other; only known predators are snakes (particularly *Pseustes poecilonota*), but damage at some preyed-on nests suggests mammals as likely predators.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout much of its range. Occurs in several large protected areas, e.g. La Selva Biological Reserve and Rincon de la Vieja, Braulio Carrillo National Park and La Amistad International Park, in Costa Rica; Soberanía and Darién National Parks and Comarca Kuna Yala Indigenous Reserve, in Panama; Los Katios, Ensenada de Utría and Munchique National Parks, in Colombia; and Bilsa Reserve, in Ecuador. Population strongholds in E Panama, and at 600-750 m on W slope of the Cordillera de Guanacaste, in Costa Rica. Deforestation throughout the species' range is such that much of the unprotected habitat formerly occupied has now gone, creating some range contractions and distributional gaps. In Ecuador, the species formerly ranged continuously as far S as Guayas, but, apart from a recently discovered hilltop population in Manglares-Churute Ecological Reserve, it has virtually disappeared from areas S of Esmeraldas. Despite local population declines, this thamnophilid's long-term viability should be maintained by the continued protection of existing parks and reserves.

**Bibliography.** Bard *et al.* (2002), Blake & Loisele (1991, 2001), Burton (1975), Carriker (1910), Cody (2000), Cory & Hellmayr (1924), Eisenmann (1952), Foster & Johnson (1974), Greenberg (1984), Gross (1927), Hilty & Brown (1986), Howell (1957), Isler & Whitney (2002), Johnson (1954), Jones (1977), Loftin (1975), Loisele (1988), McQuiston & Capparella (1992), Parker & Carr (1992), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robinson, Robinson & Brown (2000), Schemske & Brokaw (1981), Schönwetter & Meise (1967), Sieving (1992), Skutch (1945a, 1946, 1954, 1969c, 1976, 1981), Slud (1960, 1964), Stiles & Skutch (1989), Wetmore (1972), Willis (1967, 1972b, 1974a, 1980, 1983b), Willis & Eisenmann (1979), Young (1971).

## 191. Spot-backed Antbird

### *Hylophylax naevius*

French: Fourmilier tacheté

Spanish: Hormiguero Dorsipunteado

German: Ockerflecken-Ameisenwächter

**Taxonomy.** *Pipra naevia* J. F. Gmelin, 1789, Cayenne, French Guiana.

Close relationship with *H. naevioides* and *H. punctulatus* suggested by morphology, vocalizations and nest architecture. Listed races and distributions tentative, reflecting current knowledge of plumage and vocalizations; possibly represent more than one species; taxonomic study currently being undertaken. Other described races are *consobrinus* (S Venezuela, NW Brazil) and *obscurus* (N Brazil), both considered inseparable from nominate. Five subspecies recognized.

#### Subspecies and Distribution

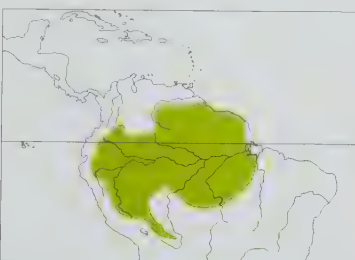
*H. n. naevius* (J. F. Gmelin, 1789) - S Venezuela (S Bolívar, Amazonas), the Guianas, SE Colombia (S from Meta and Vaupés), extreme NE Ecuador and N Peru (N of R Napo), and Brazil N of R Amazon.

*H. n. theresae* (Des Murs, 1856) - S of R Napo in E Ecuador and lowland NE Peru (Loreto), and SW & SC Amazonian Brazil (E to R Tapajós, S to S Amazonas and Rondônia).

*H. n. peruvianus* Carriker, 1932 - N Peru foothills (Amazonas, San Martín).

*H. n. inexpectatus* Carriker, 1932 - EC & SE Peru (Ucayali S to Puno, possibly extending W to base of Andes in Huánuco and Junín), extreme SW Amazonian Brazil (Acre) and NW Bolivia (W Pando, La Paz and S Beni S to extreme SW Santa Cruz).

*H. n. ochraceus* (Berlepsch, 1912) - SE Amazonian Brazil (E from R Tapajós to R Tocantins, S to N Mato Grosso).



**Descriptive notes.** 10.5-11.5 cm; 11-14 g. Interscapular patch white. Male nominate race has crown and upperparts dark yellowish-brown, except centre of back black with pale buff spots; flight-feathers dark brown, black basally, tertials black with broad buffish edges; wing-coverts black, large white to pale buff tips; tail dark reddish yellow-brown, black subterminally, tip white with pale buff tinge; head side grey, throat and lower neck side black, underparts white with band of black spots across breast and down sides, posterior underparts buff; underwing-coverts pale grey. Female resembles male, but slightly paler

above, wing-covert spots often more buff-tinged, throat white, contrasting black malar band extending to lower neck side, ground colour of underparts mostly light buff. Juvenile is similar to female but lacks interscapular patch and breast spots, underparts buffy brown, olive-brown band across breast. Race *peruvianus* has greyer crown than nominate, upperparts more chestnut, centre of back with slightly more extensive black and more pale spots, more and bigger breast spots; *theresae* differs from previous in purer grey crown, even more black on central back, grey tail with variable amount of olive tinge, broader pale tip, usually even more spots below, rear underparts light olive-buff; *inexpectatus* has crown olive-grey, back olive-brown, tail dark olive-grey; *ochraceus* has greyish crown, interscapular patch small, breast spots much reduced or absent, rear underparts yellow-ochre, female extensively yellow-ochre below. Voice. Loudsong a long series of doublets, varies geographically: nominate race (e.g. 9 doublets, 3-8 seconds) doublet of 2 clear whistles of similar length and shape, peak of first note initially at higher frequency, but lower frequency at end, intensity and pitch of doublets typically gain initially, fall at end, pace nearly constant; races *theresae* and *ochraceus* (e.g. 9 doublets, 3-8 seconds) second note much shorter than first, long



notes of doublets shorten and change shape throughout, short note peaks at higher pitch than long note at beginning and end but not in middle; *inexpectatus* (e.g. 10 doublets, 4.3 seconds) second note also higher than first, but relationship between notes of doublets constant throughout, although generally pitch increases between first and second doublets and decreases thereafter. Calls include abrupt, spitting notes, almost always in groups of 2-10; a rattle of variable length, usually descending in pitch; and long (e.g. 0.2-0.4 seconds) downward-inflected whistle.

**Habitat.** Understorey of humid lowland and foothill evergreen forest (*terra firme*, transitional, *várzea*) and adjacent mature second-growth woodland, to 1350 m. Often near treefall light-gaps with extensive low growth, bordering areas of shaded, open understorey with abundance of thin vertical saplings.

**Food and Feeding.** Feeds on variety of insects and spiders; recorded prey in Pará (Brazil) include beetles of families Carabidae, Aphodiidae, Curculionidae, Scarabaeidae and Cantharidae, ants (Formicidae), bees (Apoidea), hemipterans, orthopterans, lepidopteran larvae, spiders. Closely associated partners, individuals, or family groups forage mostly 1-3 m above ground, usually apart from mixed-species flocks; pair-members usually within 5 m of one another at all times. Progresses by hops and rapid, low-level flights between perches in the more open understorey, retreating to thicker cover when alarmed; selects mostly slender, vertical perches, to which it clings laterally, with body held horizontally and tail frequently flicked up to just above plane of body; often pauses for 1-5 seconds between movements to scan for prey. Most attack manoeuvres are short darting sallies of 15 cm to 2 m, directed shallowly downwards, horizontally, or as much as 60 degrees upwards, to ground, foliage, vines and lianas, branches or, less frequently, the air; tops and bottoms of live leaves are most frequent foraging substrates; often hovers or flutters briefly at end of upward-directed sallies to undersides of leaves. Occasionally follows army ants (both *Eciton burchelli* and *Labidus praedator*), with records from Colombia, Ecuador, Peru, Brazil and Venezuela, but seldom lingers at swarms for more than several minutes.

**Breeding.** Breeds in Dec-Mar and Aug-Oct, once in Jul, in French Guiana; nests found in late Apr-May and Sept in E Ecuador, but gonadal condition of females and sightings of fledglings or juveniles suggest breeding throughout year; female in S Venezuela (Amazonas) had a yolk egg in Mar; record of adult male feeding young male on 17th Sept in Brazil (near Manaus). Of two nests in Ecuador, one a hanging cup composed mostly of grasses and partially covered, 1 m above ground in treefall, the other a hanging cup made exclusively of palm "hairs", suspended from horizontal fork 1 m above ground in 2-m-tall sapling; in French Guiana all nests had some overhead leaves sheltering them, one was a cup 6 cm deep, made only from fern rootlets and *Marasmius* fibres, lined only with *Marasmius*, long rootlets were hung from edges, some down to ground, suspended 85 cm above ground (other nests at 0.55-1.1 m). Clutch 1-3 eggs, probably most often 2; in French Guiana normal clutch appears to be 1 (9 nests contained only single egg or chick), egg described as very deeply tinged violaceous-brown; incubation by both parents, probably only by female at night; both presumed to share in brooding and feeding of young; a nest in Ecuador contained 3 young (appears to be very unusual for species); nestling period at one nest 12-5 days.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common to common throughout most of its extensive range. Occurs in a number of formally protected parks and reserves in virtually every country in which it occurs.

**Bibliography.** Alvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Carniker (1932), Chinn-Hall *et al.* (1997), Cory & Hellmayr (1924), David & Gosselin (2002b), English (2003), Foster *et al.* (1994), Haverschmidt & Mees (1994), Hilty (2003b), Hilty & Brown (1986), Isler & Whitney (2002), Johns (1991), Meyer de Schauensee & Phelps (1978), Novas (1980), O'Neill (1974), Oniki & Willis (1972), Oren & Parker (1997), Parker (2003a), Remsen (1986), Reynaud (1998), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Schubart *et al.* (1965), Servat (1996), Sick (1993), Stotz & Bierregaard (1989), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer & Bierregaard (1995), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Terborgh & Weske (1969), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Thiollay (1988a, 1992, 1994), Tostain (2003), Tostain *et al.* (1992), Whitney (2003a), Willard *et al.* (1991), Willis (1984b), Zimmer (2003a).

## 192. Dot-backed Antbird

### *Hylophylax punctulatus*

**French:** Fourmilier perlé

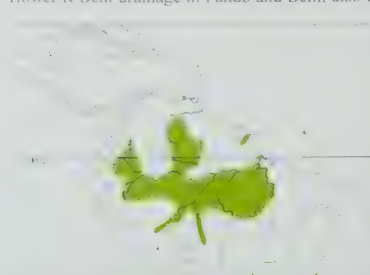
**Spanish:** Hormiguero Lomipunteado

**German:** Weißflecken-Ameisenwächter

**Taxonomy.** *Rhopotera punctulata* Des Murs, 1856, Pebas, Loreto, Peru.

Close relationship with *H. naevioides* and *H. naevius* suggested by morphology, vocalizations and nest architecture. Birds from C of range (R Madeira E to R Xingu) described as race *subochraceus*, but appear to intergrade with other populations over wide region S of R Amazon. Monotypic.

**Distribution.** S Venezuela (Amazonas, and R Caura drainage in Bolívar), French Guiana (two locations), SE Colombia (Meta, Caquetá), E Ecuador (locally Sucumbios S to Pastaza), NE & SE Peru (Loreto, S Madre de Dios), W & S Amazonian Brazil (Roraima, Amazonas, Pará S of R Amazon and E to R Tocantins and R Araguaia, Rondônia, N Mato Grosso) and N & E Bolivia (lower R Beni drainage in Pando and Beni, also extreme NE Santa Cruz).



**Descriptive notes.** 10-10.5 cm; 11-13 g. Male has crown, mantle and scapulars dark rufous-brown, white interscapular patch, back and rump black with white spots; flight-feathers dark brown, broadly edged rufous-brown, tertials black with rufous edges; wing-coverts black, large white tips; tail black, tip white; lores and head side white, throat and lower neck side black, underparts white with band of black spots across breast and down sides, posterior underparts tinged buffy olive; underwing-coverts pale grey; in C Brazil S of R Amazon rufous areas of upperside tend more towards yellow-brown and rear underparts

more ochraceous ("subochraceus"). Female differs from male in slightly paler coloration, wing-covert tips tinged pale buff, throat centre white with contrasting broad black malar, rear underparts buffy. **VOICE.** Male loudsong a series of doublets each about 0.5 seconds long of 2 somewhat similar sharp whistles, the first emphasizing an upslur and the second a downslur, sounding like "free beer", delivered at rate of c. 1 every 2 seconds, sometimes for minutes at a time, doublet often given singly; female sometimes chimes in with up to 4 similar doublets, but repeated at much faster rate. Calls include sharp "psit" notes usually in series of 2-6, a long (e.g. 0.45 seconds) downslurred whistle, and variable chattering notes.

**Habitat.** Understorey of flooded evergreen forest, mostly below 350 m, locally to 800 m. More common along black-water streams and rivers; also along margins of oxbow lakes, and in transitional forest along ephemeral streams bordered by dense stands of *Heliconia* and other broad-leaved herbaceous vegetation.

**Food and Feeding.** Feeds on various insects, probably also spiders. Closely associated partners, individuals, or family groups forage mostly 0-4 m above ground, usually apart from mixed-species flocks. Progresses by hops and rapid, low-level flights (sometimes many metres) between perches, usually sticking to dense cover, where not easy to observe; regularly flicks tail rapidly upwards to a few degrees above horizontal. Tends to select mostly horizontal or slightly inclined diagonal perches of varying diameter (1-8 cm), upon which it perches fairly upright; makes short (mostly less than 2 m), darting sallies (out, up or down) to leaves, stems, vines, branches or the ground; sallies to take flying prey from air more frequently than does largely sympatric *H. naevius*. Occasionally follows army ants (*Eciton burchelli*) where these enter *várzea* woodland, sometimes wandering back and forth near the swarm for up to 4 hours, but deserting swarms as soon as they enter *terra firme* forest.

**Breeding.** Almost nothing known. In Brazil, record of nearly grown young female (out of nest) being fed by both parents during 23rd-27th Feb in Pará, and nestling in Aug in Rondonia.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common, and patchily distributed, throughout most of its extensive range. Most Venezuelan records are clustered in just a few areas, notably along lower R Caura (Bolívar) and S from lower and middle R Ventuari, including Yacapana National Park. First recorded in Ecuador in 1974, but has subsequently been found in a number of privately owned reserves centred around ecotourism lodges, e.g. La Selva, Sacha, Yuturi, Kapawi, Cuyabeno and Imuyacocha. Not known to be common anywhere in Peru, with main centre of abundance along lower Ucayali and Napo rivers (and presumably from there E to Brazil); a few records from Manu National Park and Biosphere Reserve and the Tambopata-Candamo Reserved Zone in SE. More common but still local in Amazonian Brazil, where it is found in several large protected areas, e.g. Cristalino State Park, Tapajós National Park and Caxiuanã National Forest. More surveys are needed in order to clarify the distribution of this poorly known and perhaps under-recorded species.

**Bibliography.** Alvarez (1994), Borges *et al.* (2001), Cory & Hellmayr (1924), David & Gosselin (2002b), Foster *et al.* (1994), Hellmayr (1910), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Meyer de Schauensee & Phelps (1978), Oren & Parker (1997), Pearson (1975b), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Sick (1993), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Tostain *et al.* (1992), Willis (1984b), Zimmer, J.T. (1934a), Zimmer, K.J. (2003a), Zimmer, K.J. & Hilty (1997), Zimmer, K.J., Parker *et al.* (1997).

## 193. Scale-backed Antbird

### *Hylophylax poecilinotus*

**French:** Fourmilier zébré

**Spanish:** Hormiguero Dorsiescamado

**German:** Schuppenmantel-Ameisenwächter

**Taxonomy.** *Hypocnemis poecilinota* Cabanis, 1847, Guyana.

Possibly not closely related to other members of genus; relationships uncertain, but may prove to be part of an obligate ant-following clade. Scientific name often spelt erroneously as *poecilonota*. Some races possibly constitute separate species; other races appear to intergrade. Major taxonomic study under way. Seven subspecies recognized.

**Subspecies and Distribution.**

*H. p. poecilinotus* (Cabanis, 1847) - C & SE Venezuela (Bolívar, N Amazonas), the Guianas and NE Amazonian Brazil (Roraima and E from lower R Negro to Amapá).

*H. p. duidae* Chapman, 1923 - EC Colombia (Meta, Guanía, Vaupés), SW Venezuela (S Amazonas) and NW Brazil (upper and W bank of lower R Guiana).

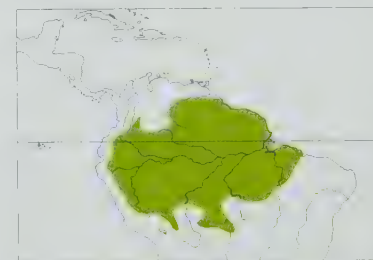
*H. p. lepidonota* (P. L. Sclater & Salvin, 1880) - SE Colombia (E Cauca, Caquetá, Putumayo, Amazonas), E Ecuador and N & EC Peru (S, W of R Ucayali, to Cuzco).

*H. p. gutturalis* Todd, 1927 - NE Peru (Loreto S of R Amazon and E of lower R Ucayali) and adjacent W Brazil (E to lower R Juruá).

*H. p. griseiventris* (Pelzelin, 1868) - EC & SE Peru (Ucayali E of middle R Ucayali, Madre de Dios, E Puno), SW Amazonian Brazil (E from R Juruá to both banks of R Madeira and drainage of R Aripuanã, Rondônia, and W Mato Grosso W of R Teles Pires) and N Bolivia (Pando, La Paz, N Beni, NE Santa Cruz).

*H. p. nigrigula* (Sneath, 1914) - SC Amazonian Brazil (extreme E Amazonas E to both banks of R Tapajós, and on E bank of R Teles Pires S to N Mato Grosso).

*H. p. vidua* (Hellmayr, 1905) - E Amazonian Brazil S of R Amazon (E from R Xingu to W Maranhão, S to N Tocantins).



**Descriptive notes.** 12-13 cm; 15-19 g. Interscapular patch white. Male nominate race is grey, paler below; lower back patchily black, edged white; wings and tail black, tertials edged white, wing-coverts broadly tipped white, tail spotted and tipped white. Female has crown and side of head reddish yellow-brown, upperparts olive-brown, lower back patchily brownish-black, edged buff; wings as male except remiges blackish-brown, edged reddish-brown, covert tips light buff, tail dark olive-brown with white spots, blackish subterminal band; throat pale greyish-white, underparts grey, flanks tinged reddish yellow-brown. Juvenile (fledgling) blackish-

grey, tail spotted white, wing-coverts tipped pale brownish-white. Races vary substantially in plumage, differ from nominate as follows: *duidae* female has posterior upperparts black with broad white edges, ground colour of tail black, underparts reddish yellow-brown, belly centre cinnamon-rufous, flanks tinged olive-brown; *lepidonota* female resembles previous but duller, somewhat paler, crown browner, belly centre light buff; *gutturalis* male has black throat, female resembles last but belly centre pale olive; *griseiventris* female lacks black and white on posterior upperparts, has head side rufous-buff, throat pale grey, underparts grey; *nigrigula* male has black throat, female is like last but head side grey, wing-coverts concolorous with remiges and without pale tips, throat white; *vidua* male is dark grey above, throat whitish, female resembles previous. **VOICE.** Loudsong nominate race a series (e.g. 10 notes, 7-1 seconds) of long upslurred notes with little space between them, each note rising in pitch and gaining in intensity, except final note or notes decrease in intensity, great individual variation in length and in extent to which final notes rise; *nigrigula* and *vidua* similar but notes frequency-modulated, producing trembling quality, and intensity tends to peak earlier in song. Calls include sharp "psit", a usually descending "chirr", more abrupt chitter, short whistle quickly repeated 3-4



times, also a longer whistle that falls and then rises in pitch, sounding like “cherri” and typically repeated 3–4 times.

**Habitat.** Understorey of humid lowland and foothill evergreen forest, to 1350 m. Primarily in *terra firme* forest, less commonly in *várzea/lígapo*.

**Food and Feeding.** Feeds on variety of insects and other arthropods; at least occasionally, also small lizards. In Brazil, nominate race near Manaus observed to prey on ant larvae (Formicidae), cockroaches (Blattidae), grasshoppers (Acrididae), spiders, centipedes (Chilopoda) and a gecko, and stomach contents of *nigrigula* included orthopterans, lepidopteran larvae, termites (Termitidae) and spiders. Other recorded prey include cicadas (Cicadidae), winged ants. Largest prey taken are c. 3–5 cm in length. Pair-members, individuals, or family groups forage mostly below 1 m, sometimes to 3 m, very rarely to 5 m; may be regular participant in mixed-species flocks in some areas, but seldom associates with such flocks in most regions, although often in vicinity of other species at army-ant swarms. Regularly follows army ants (*Ecton burchellii*, *Labidus praedator*), but seldom beyond its territorial boundaries, and just as frequently forages away from ants. Adeptly clings laterally to both slender and thick (more than 4 cm) vertical saplings, often pausing on single perch for some time while scanning, then making quick, darting sally to seize prey from the ground or, less commonly, from foliage, vines, branches, dead-leaf clusters or trunks; sometimes remains on ground and probes briefly in leaf litter with its bill; regularly lowers tail slowly, then rapidly flicks it upwards to 20 degrees or more above plane of body before lowering it once more. Away from army ants, often remains in relatively small area for long periods; once observed foraging in single patch of undergrowth for almost 1 hour. Often arrives at ant swarms at dawn, searching and singing first at sites of ant bivouacs or raiding paths from the previous afternoon; regularly visits statary colonies of ants (usually poorly attended by larger antbirds); wandering subadults may follow ants even more regularly than do territorial adults. When foraging over army ants, mostly wanders around periphery, ceding swarm centre to larger, more dominant obligate ant-followers, even being displaced or supplanted by some non-professional followers such as *Myrmoborus myotherinus*; frequently forages over small branch raids or ahead of swarms, and race *lepidonota* sometimes noted as following ant probes up trees to heights of 8 m. Over ants, clings patiently for up to 7 minutes on a vertical perch, occasionally pivoting, or reversing its orientation; most attack manoeuvres are short (to 0.5 m, occasionally to 2 m) darting sallies to the ground (69% of 213 attacks in one study) to seize prey with quick stab of the bill, followed by quick jump or flight back up to a perch before ants can counter-attack; also sallies to vines, branches, trunks or foliage, or perch-gleans prey from these surfaces by reaching out, up or down; sometimes tosses leaves with its bill to uncover prey hiding in litter. Small items consumed immediately; larger prey often carried away some distance and dissected, seemingly to avoid being robbed by larger competitors; legs of large prey often eaten first.

**Breeding.** Nov–Mar in French Guiana; nests found in Aug and Apr in Colombia (Meta); season probably Dec–Jul in E Ecuador (based on gonadal condition of females and sightings of fledglings or juveniles); in Brazil, nest records and observations of fledglings and dependent juveniles suggest season at least Mar–Dec, and possibly in all months (based on moult condition of specimens), with possible peaks in Jun–Jul and Nov–Dec near Manaus; female in Surinam had fully developed

but still shell-less egg on 24th Feb. A nest in French Guiana (nominate race) was 85 cm above ground, placed 40 cm down in a cavity, internal diameter 9 cm, lined with dead leaves and some *Marasmius* fibres; in Brazil, one (of *nigrigula*) a well-concealed cup 5 cm in diameter, partially covered by a half-overhang of leaves, with vertical back, placed 30 cm up in accumulated leaf litter at base of live palm tree, and one (of *vidua*) in Apr a messy cup of fibres and dried leaves, placed in hole at end of rotten stump, barely 0.5 m above ground in forest undergrowth, with similar nest found in Dec; an Aug nest in Colombia (either *duidae* or *lepidonota*) was cup-shaped, placed c. 50 cm up among bases of leaves of an understorey palm, and an Apr one in same locality (in Meta) was an open cup 11.5 × 9.5 cm, made of dry fibres and pieces of dry palm leaves, placed in natural cavity 8.2 × 5.3 cm and 11.5 cm deep, cavity wider inside than at entrance and deeper than base of nest, full of decomposing leaves, entrance partially covered by ferns and other understorey plants, 22 cm above ground in live tree; in Ecuador (*lepidonota*), one nest a small cup of dried grasses, built on ground. Normal clutch 2 eggs, pinkish to purplish, streaked and spotted with dark red or purple; incubation by both parents, probably only by female at night; both also brood and feed nestlings; male cares extensively for one fledgling, female for other, fledglings follow adults for at least 1–2 months.

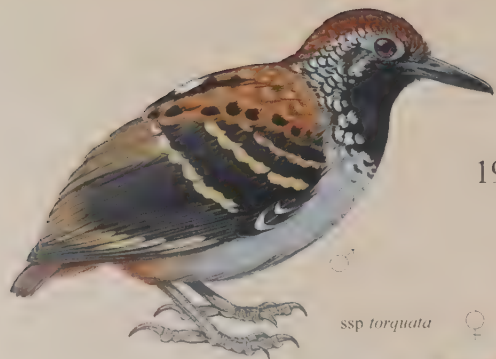
**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout its extensive range. This includes numerous large protected areas, examples of which are: Brownsberg Nature Park and Raleigh Falls-Voltzberg National Park, in Surinam; Canaima, Yapacana, Duida and La Neblina National Parks and the Alto Orinoco-Casiquiare Biosphere Reserve, in Venezuela; Jaú, Tapajós, Pacaás-Novos and Serra do Divisor National Parks and Cristalino State Park, in Brazil; Yasuni National Park, in Ecuador; Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru; and Madidi and Noel Kempff Mercado National Parks, in Bolivia. Regions occupied by this species also encompass extensive intact habitat which, although not formally protected, seems to be at little near-term risk. Continued protection of existing parks and reserves should ensure the long-term viability of this thamnophilid.

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194



ssp *torquata*



♂  
ssp *stictoptera*

♀

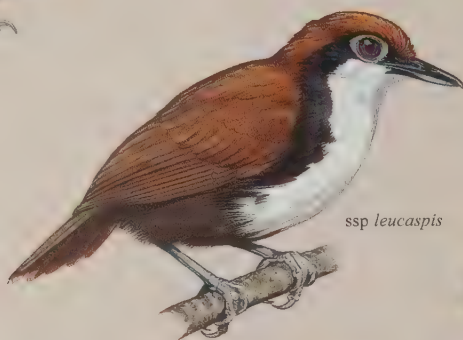


ssp  
*peruvianus*

195



ssp *albifrons*



ssp *leucaspis*



ssp *bicolor*

197



ssp *ruficeps*



ssp *aequatorialis*

196



198



♂

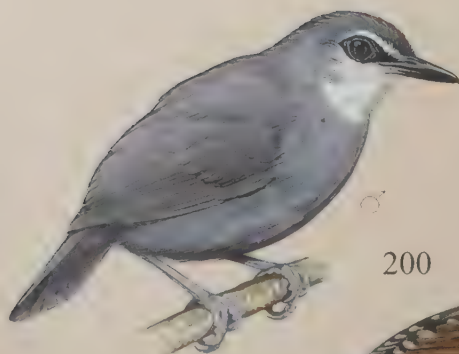
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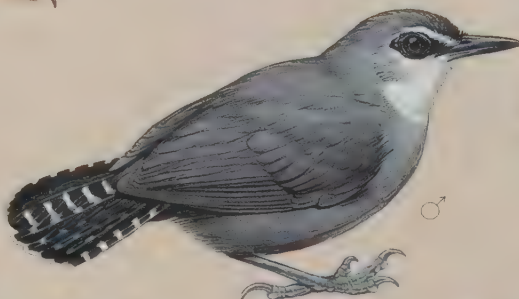
typical bird



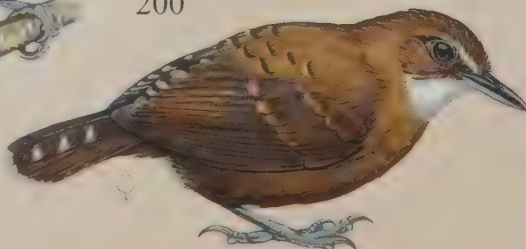
199



200



♂



♀



♀

"*maculatus*"

PLATE 68

inches 3  
cm 8



# Genus *MYRMORNIS* Hermann, 1783

## 194. Wing-banded Antbird

### *Myrmornis torquata*

**French:** Palicour de Cayenne

**Spanish:** Hormiguero Alifranjeado

**German:** Stummelschwanz-Ameisenvogel

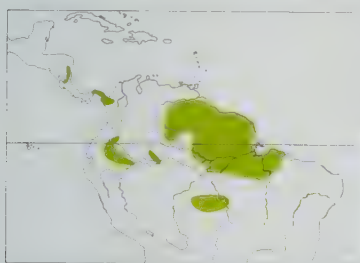
**Taxonomy.** *Formicarius torquatus* Boddaert, 1783, Cayenne, French Guiana.

Relationships uncertain; vocalizations and nest architecture suggest that it is not close to *Hylophylax* or *Pithys*, and taxonomic position within family requires review. Race *stictoptera* and some populations of nominate form may prove to be distinct species. Two subspecies recognized.

#### Subspecies and Distribution.

*M. t. stictoptera* (Salvin, 1893) - E & S Nicaragua (Zelaya Norte, Rivas), E Panama (E from Canal region) and extreme NW Colombia (Chocó, Córdoba).

*M. t. torquata* (Boddaert, 1783) - SC & SE Colombia (E base of Andes, in W Caquetá, E Cauca, Putumayo; Amazonas), NE Ecuador (Napó, Pastaza), N Peru N of R Amazon (Loreto), SE Venezuela (E & S Amazonas, Bolívar), the Guianas, and extreme W, N & S Amazonian Brazil (extreme W Amazonas N of R Amazon, N Roraima E to Amapá and W Maranhão and S to lower R Madeira and middle R Araguaia, and E Rondônia E to S Pará and N Mato Grosso).



**Descriptive notes.** 14.5-15.5 cm; 42-51 g. Interseapular patch white; periorbital region pale blue; short tail. Male nominate race has crown reddish-brown, back feathers greyish-brown, edged reddish-brown and spotted black, rump and uppertail-coverts grey, broadly tipped rufous; wings blackish-brown, narrow band of pale cinnamon across primary edges, wing-coverts broadly tipped pale cinnamon-buff; tail rufous-brown, tipped dark brown; ear-coverts, neck side and band across breast scaled black and white, throat and upper breast black, rest of underparts grey, crissum cinnamon-rufous. Female is similar to male but paler above, throat and upper breast cinnamon-rufous. Juvenile has wing pattern of adult but is largely chocolate-brown and grey. Race *stictoptera* has black and white scaled pattern largely restricted to head, wing markings deeper cinnamon, crissum brown, female with rufous of throat and breast somewhat darker and more restricted in area. **VOICE.** Loudsong nominate race N of R Amazon a series of simple whistles (e.g. 12 notes, 3-8 seconds), weak at first, then rising in intensity and pitch, notes slightly shorter than intervals, pace approximately constant throughout; S of R Amazon (e.g. 11 notes, 4-2 seconds) notes more complex, and shorten throughout song, causing pace to accelerate; *stictoptera* (e.g. 21 notes, 5-7 seconds) notes upslurred, pace faster and accelerates. Call a long (e.g. 0.6 seconds) frequency-modulated "chirr", dropping in pitch.

**Habitat.** Floor of lowland and foothill humid evergreen forest, mostly below 900 m; locally to 1300 m in E Panama. Micro-habitat preferences not well understood, but many territories are in shaded interior of forest, where understorey fairly open, and with abundance of small saplings and well-developed leaf litter; often on slopes.

**Food and Feeding.** Feeds on insects and other arthropods; also on small molluscs (Gastropoda). Recorded prey in Panama include cockroaches (Blattellidae), beetles (Coleoptera), lepidopteran larvae, sow bugs (Isopoda), millipedes (Diplopoda), spiders, and in one stomach sample a seed; in Brazil ants (Formicidae) and a small gastropod; in Venezuela also insect egg cases. Closely associated pair-members, individuals, or family groups forage mostly or entirely on the ground, and separate from mixed-species flocks. Very deliberate and inconspicuous when foraging, and easily overlooked; progresses by short hops, but regularly spends several minutes without moving more than 1 m. Regularly flicks both wings shallowly while foraging. Preys mostly on leaf-litter arthropods, obtained by flipping leaves in the manner of a leafhopper (*Sclerurus*), usually by inserting the bill beneath leaf and then making a rapid flicking action, this often assisted by a short jumping of the body; leaves tossed with minimum amount of noise, and rarely thrown farther than 15 cm; often works the same spot thoroughly, probing under each leaf within reach before moving on; probes curled dead leaves with its bill, carefully extracting the contents. Small prey swallowed immediately; even larger prey are consumed with minimal handling time. Not reported to attend army-ant swarms.

**Breeding.** At least Oct in Panama; nest records in Mar-May and Jul-Oct in French Guiana, and one in Oct in Surinam. A nest in Panama was a shallow open cup woven from rhizomorphs, placed 1-6 m above ground, and another consisted of a new lining built inside old nest of *Thamnophilus atrinucha* that had been preyed on 6 months earlier; a nest in French Guiana was a cup suspended from fork 2 m up in a sapling. Normal clutch 1 egg, creamy white, with violet-brown streaks and spots concentrated at larger end; in French Guiana, colour-ringed chick left nest before able to fly, followed its parents by jumping on ground, not observed to fly short distances until 6 days later, and was still closely attached to female when last seen, 30 days after fledging.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Poorly known; generally considered to be rare to uncommon and patchily distributed throughout its extensive range. Apparent large gaps in its distribution (e.g. no definite records from Costa Rica or W half of Panama) could be real, or may result from extremely low densities combined with under-sampling. Main stronghold for race *stictoptera* probably in E Panama, where uncommon in Soberanía and Darién National Parks. Nominant race more widespread but, similarly, densities seemingly low and distribution disjunct; only one recent record (and very few in total) from Ecuador, from the large Yasuni National Park; considered very local in Venezuela, where formerly fairly common in region near El Palmar and Rio Grande (NE Bolívar), but much of this area has been severely deforested since 1990. Amazonian Brazil a likely stronghold for nominate race, which has been recorded in such protected areas as the BDFPP INPA forests N of Manaus, Tapajós National Park and Caxiuanã National Forest; even here, however, it is typically rare and localized, and territories occupied in one year appear often to be vacant in the next. More fieldwork needed in order to locate population centres for this enigmatic species, as well as to shed more light on ecological factors influencing its patchy distribu-

tion. The Guianan region, which has received less attention from fieldworkers than has much of Amazonian lowlands, may prove to be the most productive region in which to initiate such searches.

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# Genus *PITHYS* Vieillot, 1818

## 195. White-plumed Antbird

### *Pithys albifrons*

**French:** Fourmilier manikup

**Spanish:** Hormiguero Cuerniblanco

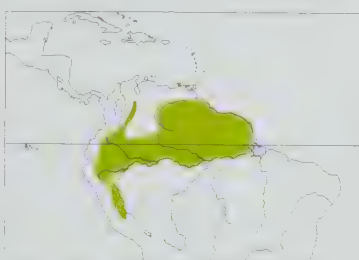
**German:** Weißgesicht-Ameisenvogel

**Taxonomy.** *Pipra albifrons* Linnaeus, 1766, Cayenne, French Guiana.

May prove to be a member of an obligate ant-following clade. Birds from NW Amazonia described as race *brevibarba*, but appear to intergrade over wide area with *peruvianus* and considered better merged with latter; apparent intermediates between that and nominate have been found also in region of upper R Negro (NW Brazil), although extent of intergradation unclear. Two subspecies recognized.

#### Subspecies and Distribution.

*P. a. peruvianus* Taczanowski, 1884 - extreme W Venezuela (E Táchira), Colombia (along entire E base of Andes and S from Caquetá and Guianá), NW Amazonian Brazil (W of R Negro), E Ecuador, and N & C Peru (N of R Amazon and R Marañón, and along base of Andes S to Ayacucho). *P. a. albifrons* (Linnaeus, 1766) - S Venezuela (Bolívar, Amazonas), the Guianas and Brazil N of R Amazon (E bank of R Negro E to Amapá).



**Descriptive notes.** 11.5-12.5 cm; 18-23 g. Adult has long, upright white tufts on both sides of forehead, shorter tufts below chin; crown and ear-coverts down to throat side black, narrow white postocular streak; upperparts grey; nuchal collar, entire underparts and tail rufous-chestnut, flanks tinged grey; underwing-coverts brownish. Female resembles male. Juvenile and young subadult lack white tufts and postocular streak and rufous nuchal collar, upperparts browner, underparts greyer. Race *peruvianus* lacks white postocular streak. **VOICE.** Loudsong a moderate-length (e.g. 0.55 seconds) whistle, dropping slightly

in pitch, repeated after intervals of c. 3 seconds, but timing variable. Calls include harsh, vibrant "chirr" (c. 1 second long), diminishing slightly in pitch and intensity, also sharp "chip" notes often repeated 2-3 times so rapidly as to be barely distinguishable.

**Habitat.** Understorey of humid lowland and foothill evergreen forest and adjacent tall second-growth woodland, to 1350 m.

**Food and Feeding.** Feeds on variety of insects and other arthropods, and at least occasionally also on small lizards; recorded prey include cockroaches (Blattellidae), grasshoppers (Acrididae), crickets (Gryllidae), beetles (Coleoptera), lepidopteran larvae, ant larvae (Formicidae), spiders and their egg sacs, centipedes (Chilopoda), and geckos. Pair-members, individuals, or family groups forage mostly 0-1 m above ground, rarely to 3-4 m, and away from mixed-species flocks, but often in vicinity of other species at army-ant swarms: 10-20 individuals may congregate over single swarm. Considered an obligate ant-follower, follows swarms of *Eciton burchelli*, *E. rapax* (rarely) and *Labidus praedator*; unlike other smaller thamnophilids that follow ants, seems to be completely dependent on ants, and rarely seen away from swarms. Early in morning, moves rapidly through forest understorey in search of ants, progressing by low-level flights of many metres, separated by brief pauses to scan; often first checks ants' raiding paths and bivouac sites from previous day and, if not successful, wanders more widely, immediately investigating vocalizations of conspecifics as well as of other obligate ant-followers; investigates inactive statary ant bivouacs in rapid passes, often visits two and occasionally three ant colonies in a single day, moving rapidly between them, even through more open understorey usually avoided by other obligate followers. Foraging strategy based on speed, both in finding ants faster than do larger birds, and in infiltrating the most active zones of swarms and then retreating rapidly (a "hit-and-run" approach) before dominant competitors can attack; use of this tactic much more frequent than in other subordinate antbirds such as *Hylophylax naevioides* and *Pyriglena leuconota*. Perches mostly below 1 m, often clinging laterally (upper leg flexed, lower leg extended) to slender vertical stems, where it pitches, yaws and pivots, or slides up and down with great agility; frequently hops abruptly from one perch to another, but most between-perch movements are short darting flights (these even more rapid than similar movements of other obligate ant-followers); also routinely uses logs and horizontal perches on fallen branches; most perches used are less than 1 cm in diameter; regularly lowers tail slowly, then rapidly jerks it upwards to plane of body before lowering it once more. By far the commonest attack manoeuvres are short (less than 0.3 m) sallies to the ground and back up to perch; sallies to air or vegetation relatively rare, as are perch-gleans from leaf, stem, branch, vine or ground surfaces; in one study, 95% of all 1781 prey captures were made 0-0.1 m above ground. Despite its small size, apparently "poaches" large prey from larger competitors, frequently moves towards latter if they are seen to make one or more prey captures; often moves quickly to pick off larvae being carried by ants, tossing aside each attached worker. Large items usually carried away to a safe spot and dissected (legs first) before being eaten. Subjected to much aggression from larger



competitors, which, given the chance, will try to catch and claw intruding individuals of present species; only the slightly smaller *Hylophylax poecilinotus* is subordinate to it at swarms; main competitors are *Gymnopithys rufigula* and *G. leucaspis*. Relatively little intraspecific competition, individuals regularly forage within 0.5 m of one another without obvious aggression; male and female of pair often forage apart from each other at swarms, and sometimes attend separate swarms. **Breeding.** Season Jul-Apr in Venezuela, Dec-Aug in Guyana and Dec-May in French Guiana; a nest in Apr and a fledgling just out of nest in Aug in Surinam; probably breeds in all months in Brazil, where short-tailed fledglings observed being fed by parents in Sept, Nov-Feb and Apr-Jul; individual birds regularly breed more than once annually, and thought to nest more or less continuously throughout year except when caring for fledged young. A nest in Guyana was cup-shaped and sunk in mat of dead leaves c. 30 cm above ground in spiny crown of small palm; in French Guiana, one was placed in midst of a tuft of a reed or sedge (Cyperaceae) at edge of small stream in a hollow in forest, another in a tuft of the herb *Rapatea paludosa*, leaves of which grow cup-like from a base at ground level; in Surinam a cup composed entirely of dead leaves, with inner lining of dark fibrous rootlets, sunk deep into mat of dead leaves c. 40 cm up in low crown of a spiny palm (*Bactris*) 2.5 m tall, the entrance facing slightly obliquely upwards in direction of stalks. Normal clutch 2 eggs, rosy white, covered with longitudinally oblong rose-brown flecks, thicker at larger end, sparse rosy hairline undermarkings all over; incubation and brooding probably by both parents (as suggested by male and female alternately disappearing from ant swarms during these stages), incubation and nestling periods not known precisely, estimated at c. 15 days and c. 12 days respectively; each parent assumes sole responsibility for one fledgling, fledglings continue to be fed for 2 months or more after leaving nest; when only single young fledged, it is cared for by male, while female often begins to accept food from another male (courtship feeding) and soon renests with different mate. Female first breeds at 8 months of age. **Movements.** Presumed resident throughout range.

**Status and Conservation.** Not globally threatened. Quite abundant throughout most of its extensive range. Occurs in numerous large protected areas, e.g. Canaima, Yacacana, Duida and La Neblina National Parks and the Alto Orinoco-Casiquiare Biosphere Reserve, in Venezuela. Brownsberg Nature Park and Raleigh Falls-Voltzberg National Park, in Surinam. Jaú National Park and the BDFPP INPA forests N of Manaus, in Brazil, and Yasuni National Park, in Ecuador. Range also encompasses extensive intact habitat which, while not formally protected, seems at little risk of being developed in near future. Appears to survive in partially logged forest, although not in small forest fragments. Continued protection of existing parks and reserves should ensure the long-term viability of this species.

**Bibliography.** Alvarez (1994), Alverson *et al.* (2001), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), David & Gosselin (2002b), Dick *et al.* (1984), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Ingels (1980), Isler & Whitney (2002), Mason (1996), Meyer de Schauensee & Phelps (1978), Novas (1980), Oniki & Willis (1972, 1982), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schönwetter & Meise (1967), Sick (1993), Snyder (1966), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Stouffer (1998), Stouffer & Bierregaard (1995), Terborgh & Weske (1969), Thiollay (1992, 1994), Tostain (2003), Tostain *et al.* (1992), Willard *et al.* (1991), Willis (1972a, 1977, 1979c, 1981, 1982d), Willis & Oniki (1978), Zimmer, J.T. (1931b), Zimmer, K.J. & Hilty (1997).

## 196. White-masked Antbird

### *Pithys castaneus*

French: Fourmilier à masque blanc

Spanish: Hormiguero Castaño

German: Weißmasken-Ameisenvogel

**Taxonomy.** *Pithys castanea* Berlioz, 1938. Andoas, lower Rio Pastaza, Ecuador-Peru; precise locality not determined, probably in Loreto, Peru.

May prove to be a member of an obligate ant-following clade. Relationships uncertain; retained in same genus as *P. albifrons* on grounds of similarities in vocalizations, but further study required. Until recent rediscovery, some authors considered that present species might be a hybrid of *P. albifrons* and some other antbird species. Determination of precise location of type locality problematic, partly because many villages in the region have same name, and also due to changing national boundaries. Monotypic.

**Distribution.** Lower R Pastaza and lower R Morona, in NE Peru; possibly also in adjacent Ecuador.

**Descriptive notes.** 14 cm; 27.5-31.5 g. Both sexes have crown, nape, lower ear-coverts and side of throat black, lores, periorbital area and chin to centre of throat white; rest of plumage bright rufous-chestnut. Voice. Loudsong a long (e.g. 1.6 seconds) whistle, rising slightly in pitch and ending with brief upslur. Calls include short (e.g. 0.3 seconds) "chirr" and abrupt doubled "chip" notes.

**Habitat.** Understorey of lowland evergreen forest, at 200-250 m. Apparently restricted along R Morona to forest types growing on poor-quality sandy soils, especially a micro-habitat known locally as "irapayal" (canopy

height over 40 m, understorey dominated by *Lepidocaryum tenue* palms 2-3 m tall); seen to follow ant swarms from irapayal into varzea forest.

**Food and Feeding.** Feeds on various insects and other arthropods, caught as they flee from broad front of moving swarms of army ants (*Eciton*). From limited number of observations available, appears to be an obligate army-ant follower; single individuals also observed following swarms of smaller ants (species unknown) which mostly moved under the leaf litter, but attendance at such swarms appeared to be less active and more sporadic. At or near army-ant front, individuals perched within 0.5 m of ground and frequently dropped to forest floor to scan and to glean arthropods. Stereotypical tail movements or other body motions have not been observed. Few instances of displacement or other indicators of dominance obtained, but appeared to displace *Gymnopithys leucaspis* at leading edge of swarm and, in turn, avoided the larger *Phlegopsis erythroptera* when latter was present. Observed to pass through forest without feeding, apparently moving between swarms, and seen around an army-ant bivouac early in morning before the ants made forays into surrounding forest.

**Breeding.** Nothing known.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Data-deficient. Restricted-range species: present in Upper Amazon-Napo Lowlands EBA. Until recently was known only from a single specimen, collected in 1937; searches made in 1979 and 1990 were unsuccessful, but areas searched possibly at too high an elevation. Rediscovered in 2001 at one locality in Peru, where it was found to be common at ant swarms, but extent of its distribution remains unclear. In view of its restricted range and its apparent preference for one habitat type, its status must be considered of critical concern; probably merits conservation status of threatened. Santiago Comaina Reserved Zone was recently

created in area surrounding the location in which the species was not long ago rediscovered, but there is apparently local opposition to making the reserved zone a more formally protected conservation unit in the future.

**Bibliography.** Berlioz (1948), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), David & Gosselin (2002b), Isler & Whitney (2002), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stotz *et al.* (1996), Valqui *et al.* (2003), Willis (1984c).

## Genus *GYMNOPITHYS* Bonaparte, 1857

### 197. Bicoloured Antbird

#### *Gymnopithys leucaspis*

French: Fourmilier à joues blanches

Spanish: Hormiguero Bicolor

German: Braunweißer Ameisenvogel

Other common names: White-cheeked Antbird (races E of Andes)

**Taxonomy.** *Myrmeciza leucaspis* P. L. Slater 1855, "Bogotá" trade skins, Villavicencio, Meta, Colombia.

May prove to be a member of an obligate ant-following clade. Forms a superspecies with *G. rufigula*. Populations W of Andes (*olivascens*, *bicolor*, *daguae*, *aequatorialis*, *ruficeps*) sometimes treated as a separate species (*G. bicolor*); preliminary study suggests that these are at least moderately differentiated genetically, but further molecular study and analysis of vocalizations are required before taxonomic changes can be recommended. Nine subspecies currently recognized.

**Subspecies and Distribution.**

*G. l. olivascens* (Ridgway, 1891) - Caribbean slope in Honduras and Nicaragua, and both slopes in Costa Rica and W Panama (Bocas del Toro, Chiriquí).

*G. l. bicolor* (Lawrence, 1863) - C & E Panama (both slopes E from Veraguas) and NW Colombia (Pacific slope in Chocó).

*G. l. daguae* Hellmayr, 1906 - Pacific slope in C Colombia (S Chocó S to Cauca).

*G. l. aequatorialis* (Hellmayr, 1902) - Pacific slope in extreme S Colombia (Nariño) and Ecuador.

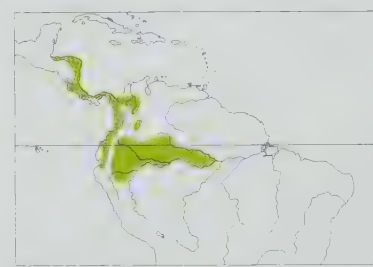
*G. l. ruficeps* Salvin & Godman, 1892 - N Colombia (N slope of Andes from Antioquia E to S Cesar, and S in Magdalena Valley to Boyacá).

*G. l. leucaspis* (P. L. Slater, 1855) - C Colombia (Meta).

*G. l. castaneus* J. T. Zimmer, 1937 - SC Colombia (Putumayo), E Ecuador and N Peru (W of R Napo, N of R Marañón).

*G. l. lateralis* Todd, 1927 - SE Colombia (E Caquetá E to S Guanía, S to Amazonas), extreme NE Peru (E of R Napo) and N Brazil N of R Amazon (E to R Negro).

*G. l. peruanus* J. T. Zimmer, 1937 - NC Peru (S of R Marañón in S Amazonas, SW Loreto and San Martín).



**Descriptive notes.** 13.5-14.5 cm; 28-34 g. Male nominate race has crown and upperparts chestnut-brown, wing and tail edgings more rufous; blackish band from lores back through eye and down neck side to flanks; cheeks to throat and down to belly white, lower underparts dark brown; underwing-coverts mixed cinnamon-brown and white; narrow periorbital area blue. Female is like male, but with cinnamon interscapular patch. Juvenile is brownish below, white feathers begin to emerge 3 weeks after fledging. Races differ mainly in head pattern (e.g. black subocular area and dusky blue around eye W of Andes) and darkness of plumage.

*castaneus* is darker than nominate, sides blacker; *peruanus* has darker upperparts; *lateralis* is browner above, crissum paler or, sometimes, white; *bicolor* has forehead and postocular area blue-grey, lores and subocular area black, wing and tail edgings more reddish yellow-brown, band from lower neck side to flanks brown (not blackish), blue periorbital area more dusky, female with no cinnamon interscapular patch; *daguae* is similar to previous but darker; *aequatorialis* is darker than last, forehead rufous, sides blacker; *olivascens* resembles previous, but forehead and postocular area brown like crown, upperparts tinged olive; *ruficeps* differs from previous in brighter rufous forehead and crown, blackish postocular area (small area of grey at rear ear-coverts), darker and more rufescent back, more rufescent band on side. Voice. Loudsong W of Andes a series (e.g. 10 notes, 2-1 seconds) starting with long, slightly upslurred whistles that shorten rapidly and gain in intensity, followed by shorter notes that drop in pitch and intensity before becoming harsh; E of Andes series (e.g. 20 notes, 3-7 seconds) begins with upslurred whistles at even pitch that shorten into rather abrupt notes dropping in frequency and intensity, then lengthen and increase again in intensity, finally decreasing in intensity and becoming harsh; loudsongs quite variable in length, but basic patterns of change of note shape and length and intensity remain. Calls include harsh, vibrant "chirr" (e.g. 0.7 seconds long), diminishing slightly in pitch and intensity, and abrupt "chup" notes, usually doubled but also in groups of 3-4.

**Habitat.** Understorey of humid lowland and foothill evergreen forest (primarily *terra firme*) and adjacent mature second-growth woodland; mostly below 900 m, locally higher, to 1500 m in Panama and 1700 m in Costa Rica.

**Food and Feeding.** Feeds on insects and other arthropods, particularly orthopterans and spiders; less frequently on small frogs and lizards. Recorded arthropod prey include cockroaches (Blattidae), crickets (Gryllidae), grasshoppers (Acrididae), katydids (Tettigoniidae), hemipterans, beetles (Coleoptera), earwigs (Dermaptera), hymenopterans, lepidopterans, spiders, scorpions (Scorpiones), centipedes (Chilopoda), millipedes (Diplopoda), sow bugs (Isopoda); lizards mostly *Anolis limifrons*. Forages mostly 0-1 m above ground, occasionally to 5 m, and away from mixed-species flocks. Considered an obligate army-ant follower, seldom seen away from ants; in the most extensive study, of 352 swarms attended by nesting pairs in Panama, 93.5% of these were of *Eciton burchelli*, remaining 6.5% being of *Lahadius praedator*, despite estimated density of latter on study site of 4-15 swarms/km<sup>2</sup>, compared with 2.5/km<sup>2</sup> of *Eciton*; marked birds found to visit swarms 1 km apart in course of same week, and 0.5 km apart within space of 70 minutes. Early in morning, cruising individuals, pairs, or family groups work through the forest 0.5-2 m above ground, flying up to 15 m at a time, alighting for a few seconds to peer about, then moving on; typically, first checks ants' raiding paths and bivouac sites from previ-



ous day and, if not successful, wanders more widely, immediately investigating vocalizations of conspecifics as well as of other obligate ant-followers; once located, swarms are generally followed for most of the day; often loaf around bivouacs for extended periods, waiting for ants to raid; on days when statary swarms fail to raid, the birds often switch to another colony. Progresses by hops and short, fluttery flights; tail held slightly fanned and regularly lowered slowly to as much as 80 degrees below plane of body, then rapidly flicked upwards to 10 degrees or more above body level. Perches mostly below 1 m, often clinging laterally (upper leg flexed, lower leg extended) to slender vertical stems, where it pitches, yaws and pivots, or sidles up and down with great agility, also routinely using logs and horizontal perches on fallen branches; while perched, always peers intently downwards at swarming ants, spending up to a few minutes at a single perch before trying another spot; more frequently, multiple prey captures may take place within seconds if a bird is positioned near swarm front; in one study, individuals foraging at good sites over ants darted for prey every 42-6 seconds on average. Most attack manoeuvres are short sallies or sally-pounces to the ground, followed by quick hop back up to perch before ants can counter-attack; less frequently, makes short aerial sallies, or sallies to vines, lianas, logs, aerial roots, branches or foliage, or perch-gleans from these surfaces by reaching out, up or down with a quick stab of the bill or by short horizontal lunge. Dominant birds in the hierarchy mostly wait on vertical perches over the most active parts of the swarm and sally to the ground; subordinate birds much more likely to clamber about, perch-gleaning or sallying to other substrates. When fleeing prey darts under leaf litter, the antbird sallies to or pounces on the spot and, with legs splayed, begins to toss leaves with the bill until arthropod uncovered; frequently makes bounding, zigzag pursuit in hops and short flights through swarm to follow evasive manoeuvres of prey. All but largest items consumed immediately, with minimal handling time; holds large prey in the bill by an appendage, shakes it vigorously until appendage falls off, then continues systematically to remove other appendages and to dissect body segments before swallowing. Subordinate individuals often displaced to less favorable positions at periphery of swarms or to higher perches, and may follow ant probes as high as 5 m up trees; individuals low in the pecking order sometimes resort to "stealing" prey from army ants carrying food back to bivouacs. Dominates over and aggressively displaces and supplants the smaller *Hylophylax naevioides* and other non-obligate ant-followers at swarms, but typically subordinate to larger *Phaenastictus meclanani*, *Phlegopsis erythroptera* and *Rhagmatophina cristata*, as well as to larger species of woodcreeper (*Dendrocincla*, *Dendrocolaptes*, *Xiphorhynchus*, *Hylexetastes*) and ground-cuckoo (*Neomorphus*) in areas where these also occur. Interspecific aggression usually elicits only low-intensity displays; intraspecific aggression more common, typically elicits higher-intensity responses.

**Breeding.** Season Mar-Jan (concentrated in Apr-Sept) in Costa Rica and Apr-Dec in Panama; gonadal condition of females and presence of fledglings or juveniles indicate breeding in all months in Ecuador (Limoncocha); fledglings being fed by adults in late Jul, in NE Peru. Nest descriptions from Costa Rica and Panama: a simple cup consisting of anything from a few to more than 100 strips of dead palm leaves and fragments of other dead leaves, usually pressed into bottom of or wedged across a cavity 6-10 cm in diameter and 10 cm or more deep in top of rotting stub or stump, once in sheathing base of upright fallen palm frond balanced precariously against tree, often thin lining of rhizomorphs (to which both parents often continue to add during incubation); nests have been found in stumps of the palms *Scheelea zonensis*, *Oenocarpus panamensis* and *Euterpe*; height above ground of 13 nests in Panama 0.1-1.5 m (median 0.4 m); same nest occasionally used twice. Normal clutch 2 eggs, white to creamy or light vinaceous fawn, heavily streaked and spotted longitudinally with dark reddish-brown; incubation by male for much of morning, relieved in early afternoon by female, then male often takes another late-afternoon shift, before yielding to female for entire night, incubation period in Panama 15 days at one nest, 16 days at another; both parents brood and feed chicks, food items usually dissected and legs removed before brought to nest (particularly when nestlings only a few days old); at a nest in Panama, male fed young 79 times and female 62 times in 53-6 hours, average interval between feeds 38 minutes for male and 41 minutes for female; largest item delivered was a lizard (*Anolis limifrons*) c. 2.5 cm in length from snout to vent; when nestlings 1-2 days old parents swallowed faecal sacs and then brooded, later in period carried sacs away; brooding during day ceased when young 6-13 days old; nestling period at 3 nests was 14 days, 13-14 days and 14-15 days. In two studies in Panama, success was 28% (5 of 18 nests fledged at least one young) and 33% (1 of 3), and predation rates at watched nests compared with unwatched nests determined to be roughly the same; during many years of study, no pairs known to nest successfully more than once in a year, although pairs that failed in first attempt repeatedly attempted to re-nest.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout its extensive range. Occurs in numerous formally protected large areas, e.g. Braulio Carrillo and Corcovado National Parks, La Amistad International Park, and La Selva Biological Reserve, in Costa Rica, Soberania and Darién National Parks, in Panama, Yasuni National Park, in Ecuador, and Jaú National Park, in Brazil; also in several privately owned reserves centred around ecotourism lodges, e.g. La Selva and Sacha, in Ecuador, and Explorap, Explorama and ACEER Lodges, near Iquitos, in Peru. Range also encompasses extensive intact habitat which is not formally protected, but is still at low risk of development in immediate future. Both "Bicoloured" types (W of Andes) and "White-cheeked" types (E of Andes) maintain healthy populations over a number of protected areas. The former group, however, has suffered some local habitat contractions and consequent range fragmentation as a result of widespread deforestation in parts of its range; local populations in Honduras, Nicaragua and parts of Costa Rica and Panama have declined or disappeared as entire regions have been cleared for human settlement and agriculture. In W Ecuador, the species was formerly found S to coastal El Oro, but no recent reports from S of E Guayas and NW Azuay; now very local in SW, and has disappeared from Rio Palenque Science Centre.

**Bibliography.** Alvarez (1994), Blake & Loisele (1991, 2001), Burton (1975), Chapman (1929), Cody (2000), Cory & Hellmayr (1924), David & Gosselin (2002b), Eisenmann (1952), Hackett (1993), Hilty (1974, 1997), Hilty & Brown (1986), Howell (1957), Isler & Whitney (2002), Johnson (1954), Jones (1977), Loisele (1988), Monroe (1968), Pearson (1975c), Richmond (1893), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robinson *et al.* (2000), Schemske & Brokaw (1981), Schönwetter & Meise (1967), Sick (1993), Skutch (1954, 1957, 1969c, 1976, 1985), Slud (1960, 1964), Stiles & Skutch (1989), Stiles *et al.* (1999), Stotz *et al.* (1996), Swartz (2001), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Van Tyne (1944), Wetmore (1972), Willis (1967, 1973a, 1974a, 1980, 1983b), Willis & Eisenmann (1979), Willis & Oniki (1978), Zimmer (1937).

## 198. Rufous-throated Antbird

### *Gymnophithys rufigula*

**French:** Fourmilier à gorge rousse

**German:** Rostkehl-Ameisenvogel

**Spanish:** Hormiguero Gorgirrufo

**Taxonomy.** *Turdus rufigula* Boddaert, 1783, French Guiana.

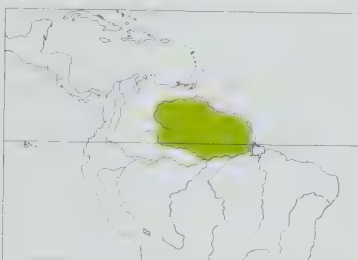
May prove to be a member of an obligate ant-following clade. Forms a superspecies with *G. leucaspis*. Races may represent only clinal variation. Three subspecies recognized.

#### Subspecies and Distribution.

*G. r. pallidus* (Cherrie, 1909) - S Venezuela (Bolívar except R Cuyuni drainage, Amazonas except vicinity of Pica Yavita-Pimichin).

*G. r. pallidigula* Phelps, Sr. & Phelps, Jr., 1947 - vicinity of Pica Yavita-Pimichin, in extreme S Venezuela (SW Amazonas).

*G. r. rufigula* (Boddaert, 1783) - extreme E Venezuela (R Cuyuni drainage), the Guianas and E Brazil N of R Amazon (R Negro E to Amapá).



**Descriptive notes.** 11.5-12.5 cm; 26-32 g. Male has forehead and lores brownish-black, upperparts olive-brown, white interscapular patch; wings and tail dark yellow-brown; chin and area under eye rufous-chestnut, becoming cinnamon on throat and upper breast; sides, flanks and posterior underparts olive-brown; underwing-coverts white, tinged cinnamon; large periorbital area pale blue. Female is somewhat duller than male, interscapular patch cinnamon. Race *pallidigula* has throat and centre of belly paler than nominate, breast more ochraceous; *pallidus* is similar to previous but back paler, more olivaceous. **VOICE.** Loudsong a series (e.g. 14 notes, 3 seconds) beginning with long, slightly upslurred notes, shortening into flat notes that lengthen but drop abruptly in pitch and intensity at end. Calls include harsh, vibrant "chirr" (e.g. 0.7 seconds), diminishing slightly in pitch and intensity, and abrupt "chup" notes, usually doubled but also in groups of 3-4.

**Habitat.** Understorey of humid lowland and foothill evergreen forest (primarily *terra firme*); mostly below 600 m, locally to 1200 m.

**Food and Feeding.** Feeds mostly on insects and other arthropods; recorded prey include grasshoppers (Acrididae), cockroaches (Blattidae), ants (Formicidae), spiders, and small lizards. Forages mostly 0-1 m above ground, occasionally to 3 m, and away from mixed-species flocks, but often in presence of other species at ant swarms. Considered an obligate army-ant follower, seldom seen away from ants; follows swarms of both *Eciton burchelli* and, to lesser degree, *Labidus praedator*. Early in morning, cruising individuals, pairs, or family groups work through forest 0.5-3 m above ground in search of ants, flying up to 15 m at a time, alighting for a few seconds to peer about, then moving on; probably checks raiding paths and bivouac sites of ants from previous day and, if not successful, wanders more widely, immediately investigating calls of conspecifics and of other obligate ant-followers; once located, swarms generally followed for most of the day. Progresses by hops and short, fluttery flights; tail held slightly fanned, and regularly lowered slowly to as much as 80 degrees below plane of body, then rapidly flicked upwards to 10 degrees or more above body level. Perches mostly 0.3-0.8 m up, often clinging laterally (upper leg flexed, lower leg extended) to slender vertical stems, where it pitches, yaws and pivots, or sidles up and down with great agility; also routinely uses horizontal perches on fallen branches, stumps and logs; continuously peers intently downwards at swarming ants, spending 5-40 seconds on perch before switching to another. Most attack manoeuvres are short sallies or sally-pounces to the ground, followed by quick hop back up to perch before ants can counter-attack; less frequently, short sallies to air or to vines, lianas, logs, aerial roots, branches or foliage. Often perch-gleans prey from ground, stem, branch, root or vine surfaces, by reaching out, up or down with quick stab of the bill or by short horizontal lunge. Multiple prey captures may take place within seconds; all but largest prey consumed immediately, with minimal handling time; large prey held in the bill by an appendage, then shaken vigorously until appendage falls off, then other appendages systematically removed before swallowing. Dominates and aggressively supplants and displaces smaller *Pithys albifrons* and non-obligate ant-followers such as *Hylophylax poecilnotus* at swarms, but usually subordinate to larger woodcreepers (*Dendrocolapidae*) and to *Phlegopsis erythroptera* when these present.

**Breeding.** Season at least Dec-Jun in Guyana, Jun-Jul and Nov-Dec in French Guiana; record of recently fledged juvenile in Dec in S Venezuela (Amazonas); in almost all months in Brazil, but near Manaus sightings of recently fledged young fed by adults indicate concentration in Jan-Apr, and a nest found in Apr-May in Amapá. Nest in Amapá was cup-shaped, 5 cm deep, 5.5 cm internal diameter, 8 cm external diameter, constructed from short pieces of dead palm (*Asrocaryum*) leaves, scanty lining of finer material, placed 48 cm above ground in cavity of rotten stump 102 cm tall; one Guyana nest described as concave, c. 8 cm in diameter, constructed from small twigs and vine stems, lined with few pieces of coarse fibre, c. 23 cm up in cavity of rotten tree stump 1 m tall and c. 15 cm in diameter, another was cup-shaped, made of twigs with innermost lining of palm leaves, placed 51 cm above ground in cavity near top of broken-off palm trunk 12-15 cm in diameter; a nest in French Guiana described only as placed in small dead stump. Normal clutch 2 eggs, white with significant amount of reddish spots and streaks; incubation probably by both parents, only female at night (as with other antbirds); both brood and feed chicks; at Amapá nest, presumed female was only parent to brood at night and provided 37% of all feeds, presumed male made remaining 63% of feeds, young fed with small lizards, grasshoppers, cockroaches, and many items too small to identify; parents swallowed faecal sacs before brooding when young small, but carried them away from nest when chicks older; young were brooded frequently until 7-8 days old, day-time brooding discontinued by day 9-10; nestling period 13-14 days.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout its range. Regions occupied by this species contain a number of protected areas, e.g. Canaima, Yapacana, Duida and La Neblina National Parks and the Alto Orinoco-Casiquiare Biosphere Reserve, in Venezuela, Brownsberg Nature Park and Raleigh Falls-Voltzberg National Park, in Surinam, and Pico da Neblina National Park, Roraima National Forest, the Waimiri-Atroari Indigenous Reserve, Ducke Reserve and the BDFFP INPA forests N of Manaus, in Brazil. Range also encompasses extensive areas of intact habitat which, although not formally protected, are seemingly at little risk of development in near term.

**Bibliography.** Beebe *et al.* (1917), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), David & Gosselin (2002b), Dick *et al.* (1984), Hackett (1993), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Mason (1996), Meyer de Schauensee & Phelps (1978), Moskovits *et al.* (1985), Novaes (1980), Oniki (1971a), Oniki & Willis (1972, 1982), Parker, Foster *et al.* (1993), Phelps & Phelps (1963), Reynaud (1998), Ridgely & Tudor (1994), Robbins & Watson (2003), Sick (1993), Snyder (1966), Stotz & Bierregaard (1989), Stotz *et al.* (1996), Stouffer (1998), Stouffer & Bierregaard (1995), Thiollay (1992, 1994), Tostani *et al.* (1992), Willis (1967, 1977, 1979c, 1982d), Willis & Oniki (1978), Zimmer (2003a), Zimmer & Hilty (1997).

## 199. White-throated Antbird

### *Gymnophithys salvini*

**French:** Fourmilier de Salvin

**German:** Bindenschwanz-Ameisenvogel

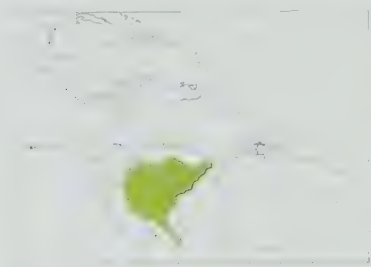
**Spanish:** Hormiguero Gorgiblanco



**Taxonomy.** *Pithys salvini* Berlepsch, 1901, San Mateo, Cochabamba, Bolivia.

May prove to be a member of an obligate ant-following clade. Forms a superspecies with *G. lunulatus*, and has been treated as conspecific. Birds in NW of range (E Peru E to R Purús, in Brazil) described as race *maenulatus*, but intergrade with other populations; moreover, high degree of individual variation in plumage exhibited by all populations. Monotypic.

**Distribution.** E Peru (S of R Amazon and E of R Ucayali, S to drainage of R Madre de Dios), SW Amazonian Brazil (E to R Madeira, S to Acre) and NW & C Bolivia (Pando, La Paz, Beni, Cochabamba).



**Descriptive notes.** 13-13.5 cm; 22-28 g, mean 25.9 g. Male is mostly grey, wings somewhat darker, except for white supercilium, anterior ear-coverts, chin and throat; tail barred blackish-grey and white; underwing-coverts grey. Distinguished from *G. lunulatus* by barred tail, slightly paler plumage. Female has crown centre dark olive-brown with faint rufous scaling, nape, head side, throat and upper breast rufous; mantle olive-brown, becoming lightly barred black and rufous on back, rump reddish yellow-brown; remiges broadly edged rufous, wing-coverts and tertials brown, edged rufous; tail rufous, thinly barred black.

posterior underparts reddish yellow-brown, becoming olive-brown on flanks; generally darker, with more heavily barred upperparts, in N ("maenulatus"). Subadult male is dark grey with brown wings, throat patchily white. Voice. Loudsong a series (e.g. 6 notes, 4 seconds) of long whistles with little space between, typically individual notes ascend slightly in pitch with sharper upslur at end, while overall each note drops in pitch, and final note(s) of lower intensity, but number of notes highly variable (2-10); variant of loudsong (perhaps a distinct vocalization) with all notes except, typically, the initial one harsh and unmusical. Calls include abrupt "chup" and much longer "chirr".

**Habitat.** Understorey of humid evergreen forest, to 450 m. Occurs in *terra firme*, transitional forest and floodplain-forest.

**Food and Feeding.** Feeds on variety of arthropods. Recorded prey include orthopterans, termites (Isoptera), ant larvae (Formicidae), spiders; several records of individuals eating larvae of non-army ants as these were carried by workers fleeing approaching army-ant swarm. Largest recorded prey items recorded c. 22 mm. Forages as pairs, individually, or in family groups, mostly below 1 m; does not follow mixed-species flocks, but often in presence of other species at ant swarms, and may then be displaced to heights of 3 m by dominant ant-following species. Considered an obligate army-ant follower, recorded as following swarms of *Eciton burchelli* and *Labidus praedator*; although up to 7 individuals reported at one swarm, seldom forms big concentrations, and a single pair or family is much more common. Early in morning, cruising individuals, pairs or family parties work through the forest 0.5-3 m above ground in search of ants, flying up to 15 m at a time, alighting for a few seconds to peer about, then moving on; frequently, first checks raiding paths and bivouac sites of ants from the previous day and, if not successful, wanders more widely, immediately investigating vocalizations of conspecifics as well as those of other obligate ant-followers; once located, swarms are generally followed for most of the day. Progresses by hops and short, fluttery flights; tail regularly lowered slowly to as much as 80 degrees below plane of body, then rapidly flicked upwards to 10 degrees or more above body level. Perches mostly 0.1-0.7 m above ground, often clinging laterally (upper leg flexed, lower leg extended) to slender vertical stems mostly less than 3 cm thick, and pitching, yawing and pivoting, or sidling adeptly up and down; routinely uses horizontal perches on fallen branches, root buttresses, and stilts of stilt-rooted trees. Most attack manoeuvres are short sallies or sally-pounces to the ground, followed by quick hop back up to a perch before ants can counter-attack; less frequently makes short aerial sallies, or sallies to vines, lianas, logs, aerial roots, branches or foliage. Often perch-gleans prey from ground, stem, branch, root or vine surfaces, by reaching out, up or down with quick stab of the bill or by short horizontal lunge; this behaviour more common than among *G. leucaspis* and *G. rufigula* or other obligate ant-followers. Large prey taken less often than by other obligate ant-following antbirds; when large item taken, it is shaken and mandibulated, but not held with the feet or bashed against substrate; dissects prey less commonly than do most congeners or *Phlegopsis* and *Rhegmatorhina*; bill-wiping following prey consumption also less common than among species that regularly take larger prey. In general, less active and conspicuous at ant swarms than are other obligate followers, this possibly an adaptation to avoid aggression from more dominant species. Dominates smaller, non-obligate ant-followers such as *Hylophylax naevius* and *H. poecilinotus* and *Myrmoborus myotherinus* at ant swarms, and recorded as occasionally displacing even the larger Plain-brown Woodcreeper (*Dendrocincla fuliginosa*), but usually subordinate to larger obligate ant-following thamnophilids such as *Phlegopsis erythroptera*, *Rhegmatorhina melanosticta* and *Myrmeciza fortis*; often displaced by larger species to peripheral or higher zones around swarms. Intraspecific aggression common when two or more pairs or family groups attend a swarm, and subordinate birds are similarly displaced to higher or more peripheral stations; females always supplant their mates, never the reverse, and mates seldom forage less than 1-2 m apart unless male is courtship-feeding female. Twice observed at colonies of termites that were swarming or moving the nest above ground, and carrying soft-bodied (up to 1 cm) larvae; from low perches on stems or on a log, the birds rapidly picked larvae off the ground and devoured them, taking up to 34 in rapid succession, then moved away for a while before returning to attack the swarm, sometimes pushing over leaves to uncover larvae.

**Breeding.** Little known. Two nests found in Nov in Peru (Madre de Dios); young following parents in Mar-Apr at two sites in W Brazil. Nest constructed entirely of narrow strips of dry palm-frond leaflets, or pieces of palm fronds 3-5 cm long, one nest shaped into a cup but the other not; located in hollow palm stump rising 41 cm and 44 cm from forest floor, floor of nest-cavity c. 15 cm below top of stump; stump 9-7 cm and 6-8 cm in diameter, one in a small patch of *Heliconia*/Mantecaria plants c. 1.5 m tall. Clutch 2 eggs, light pink, maroon speckling concentrated at blunt end.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Fairly common throughout its relatively small range. This includes some large protected areas, e.g. Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Zone, in Peru, Serra do Divisor National Park, in Brazil, and Madidi National Park, in Bolivia; also extensive areas of intact habitat, particularly in Brazilian part of range, which are unprotected but appear to be at little near-term risk of development. Considered to be of high sensitivity to human disturbance.

**Bibliography.** Alverson *et al.* (2000), Chesser (1995), Cory & Hellmayer (1924), David & Gosselin (2002b), Foster *et al.* (1993), Haekett (1993), Isler, M.E. & Isler (2003a), Isler, P.R. & Whitney (2002), Johns (1991), O'Neill (1974), Parker & Bailey (1991), Remsen (1986), Ridgely & Tudor (1994), Rosenberg (2003), Servat (1996), Sick

(1993), Stotz *et al.* (1996), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Willis (1968b), Willis & Oniki (1978), Willson (2000), Willson-Hillman (2003).

## 200. Lunulated Antbird

### *Gymnophithys lunulatus*

**French:** Fourmilier lunulé

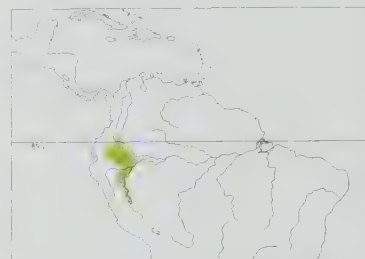
**German:** Schwarzschanz-Ameisenvogel

**Spanish:** Hormiguero Lunulado

**Taxonomy.** *Pithys lunulata* P. L. Sclater and Salvin, 1873, Sarayacu, Loreto, Peru.

May prove to be a member of an obligate ant-following clade. Forms a superspecies with *G. salvini*, and has been treated as conspecific. Monotypic.

**Distribution.** E Ecuador (Sucumbios, Napo, Pastaza, Morona-Santiago) and N & C Peru (W of R Napo and R Ucayali).



**Descriptive notes.** 13-13.5 cm; 22-26 g. Male is mostly grey, except for white supercilium, anterior ear-coverts, chin and throat; tail blackish-grey. Differs from similar *G. salvini* in slightly darker coloration, unbarred tail. Female has white supercilium, darker posteriorly, dark olive-brown lores and postocular patch, white subocular area and throat; crown and upperside yellowish olive-brown, back feathers, tertials and wing-coverts edged blackish and light buff at tips, tail dark greyish-brown, barred whitish on inner webs; underparts olive-brown, yellowest and palest on centre of breast; underwing-coverts olive-brown. Juvenile male is like female, but lacks supercilium, throat patchily white. Voice. Loudsong a series (e.g. 12 notes, 3-3 seconds) in which unmusical "chip" notes gradually lengthen and flatten into long mellow whistles that finally fall in pitch. Calls include long and usually interrupted "chirr" and abrupt "chup".

**Habitat.** Understorey of humid evergreen forest, primarily in seasonally flooded *várzea* and adjacent transitional forest; mostly below 400 m, locally to 950 m.

**Food and Feeding.** Feeds on a variety of arthropods. Recorded prey include crickets (Gryllidae), cockroaches (Blattidae), ant larvae (Formicidae), spiders. Several records of individuals eating larvae of non-army ants as these were carried by workers fleeing approaching army-ant swarm; one female noted to pick 21 ant larvae, and a male and young male seen to take 47. Largest recorded items c. 22 mm. Pairs, individuals, or family groups forage mostly below 1 m; does not follow mixed-species flocks, but often forages in presence of other species at ant swarms, and may then be displaced to heights of 3 m by dominant ant-following species. Considered an obligate army-ant follower, attending swarms of *Eciton burchelli*, *E. rapax* and *Labidus praedator*; up to 10 individuals reported at a swarm, but single pair or family much more common. Early in morning, cruising individuals, pairs or family groups work through the forest 0.5-3 m above ground, flying up to 15 m at a time, alighting for a few seconds to peer about, then moving on; frequently checks ant raiding paths and bivouac sites from previous day and then, if not successful, wanders more widely, immediately investigating vocalizations of conspecifics and of other obligate ant-followers; once located, swarms are generally followed for most of day. Progresses by hops and short, fluttery flights; tail regularly lowered slowly to as much as 80 degrees below plane of body, then rapidly flicked upwards to 10 degrees or more above body level. Perches mostly 0.1-0.7 m above ground, often clinging laterally (upper leg flexed, lower one extended) to thin (mostly 1-3 cm) vertical stems, where it pitches, yaws and pivots, or sidles skilfully up and down; also routinely uses horizontal perches on fallen branches, root buttresses, and stilts of stilt-rooted trees. Most attack manoeuvres are short sallies or sally-pounces to the ground, followed by quick hop back up to a perch before ants can counter-attack; less frequently, short sallies to air, or to vines, lianas, logs, aerial roots, branches or foliage. Often perch-gleans prey from ground, stem, branch, root or vine surfaces, by reaching out, up or down with a quick stab of the bill or by a short horizontal lunge; this behaviour more common than among *G. leucaspis* and *G. rufigula* or other obligate ant-followers. Large prey taken less often than by other obligate ant-following thamnophilids; when large item taken, it is shaken and mandibulated, but not held with the feet or bashed against substrate; also, less often dissects prey than do *G. leucaspis* and *G. rufigula* or *Phlegopsis* and *Rhegmatorhina*; bill-wiping following prey consumption also less common than in species that regularly take larger prey. In general, less active and conspicuous than other obligate followers at ant swarms, probably reflecting its more subordinate status; more sedate and given to perching for longer periods at a single station, often within tangles of fallen branches. Dominates smaller, non-obligate ant-followers such as *Hylophylax naevius* and *H. poecilinotus* and *Myrmoborus myotherinus* at swarms, and occasionally displaces larger White-chinned Woodcreeper (*Dendrocincla merula*), but clearly subordinate to larger species such as *Phlegopsis erythroptera* and *P. nigromaculata*, *Myrmeciza fortis*, *Rhegmatorhina melanosticta*, and its congener *Gymnophithys leucaspis*; often displaced by larger species to peripheral or higher zones around swarms of *Eciton burchelli*; two individuals of present species, thus displaced, were noted as "stealing" prey carried by army ants. More likely than larger obligate ant-followers to attend smaller swarms of less preferred ants such as *Labidus praedator* or *Eciton rapax*, where only likely competitors are smaller subordinates such as *Hylophylax poecilinotus* or occasional *Pithys albifrons*. Intraspecific aggression common when two or more pairs or families attend a swarm, but aggression usually less vocal and sustained than among other obligate ant-followers; females always supplant their mates, never the reverse, and mates seldom forage less than 1-2 m apart unless male is courtship-feeding female. As young begin to feed themselves and start moulting into adult plumage, they are often dominant over their own parents and other adults at swarms, frequently supplanting adults without eliciting a display or challenge; subadults unescorted by parents apparently lose some of these privileges.

**Breeding.** Little known. In Peru (Yarinacocha), fledglings common in late Dec and early Jan, season speculated as approximately Oct-Apr on basis of presence of young and timing of rainy season. Male observed to courtship-feed female. Most pairs escorted and fed 2 young; recently fledged young remain in hiding within vine tangles and other cover, where each parent fed one fledgling and ignoring the other.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Rare to uncommon throughout most of its small range. Occurs in a number of privately protected areas centred on ecotourist lodges and camps in lowlands of E Ecuador, e.g. Sacha, La Selva, Cuyabeno, Yuturi and Kapawi Lodges, and Tiputini Biodiversity Station; also in the large Yasuni National Park. In Peru, presence confirmed in Cordillera Azul National Park and probably also occurs in Pacaya-Samiria National Reserve; at



least formerly fairly common at Yarinacocha (Loreto), but this area is not protected. More accurate estimations of this species' distributional limits and population centres are needed. Considered to be of high sensitivity to human disturbance. Although its habitat is at present relatively intact, much of E Ecuador has been opened up for oil exploration and drilling, and the road-building and subsequent human colonization and environmental degradation that inevitably follow could place

this species at risk in the future. Its total population may be relatively small, and it is known from only a few formally protected areas.

**Bibliography.** Álvarez (1994), Alverson *et al.* (2001), Cory & Hellmayr (1924), David & Gosselin (2002b), Freile (2001), Hackett (1993), Isler & Whitney (2002), O'Neill & Pearson (1974), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Stotz *et al.* (1996), Willis (1968b, 1984c), Willis & Oniki (1978), Zimmer, J.T. (1937), Zimmer, K.J. (2003a).







# Genus *RHEGMATORHINA* Ridgway, 1888

## 201. Bare-eyed Antbird

### *Rhegmatorhina gymnops*

**French:** Fourmilier fuligineux

**German:** Schwarzkopf-Ameisenvogel

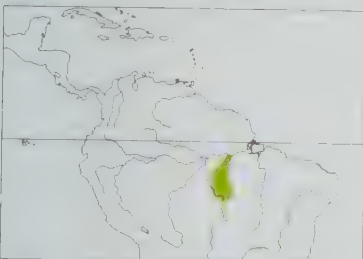
**Spanish:** Hormiguero Ojicalvo

**Other common names:** Santarem Antbird

**Taxonomy.** *Rhegmatorhina gymnops* Ridgway, 1888, Santarém, Pará, Brazil.

May prove to be a member of an obligate ant-following clade. This and other members of genus form a well-defined species group. Monotypic.

**Distribution.** SE Amazonian Brazil between E bank of R Tapajós and R Iriri, extending S to both banks of middle R Teles Pires (Mato Grosso).



**Descriptive notes.** 13.5-14.5 cm; 27-30 g. Large periorbital patch pale greyish-green; fairly prominent crest. Male has head to upper breast blackish-grey; upperparts and tail dark reddish yellow-brown, wings brighter reddish; posterior underparts dark greyish-brown, brownest on flanks; underwing-coverts brownish-grey. Female has head and throat brownish-black, upperparts, wings and tail much as male, underparts dark yellowish-brown. **VOICE.** Loudsong a short series (e.g. 5 notes, 2-8 seconds) of whistles, first note longest and most flat, second shortest and most downslurred, following notes lengthen and flatten. Calls include harsh, vibrant "chirr", diminishing slightly in pitch and intensity, and abrupt "chip".

**Habitat.** Understorey of humid lowland evergreen forest, to 200 m. At Alta Floresta (Mato Grosso), occurs in both transitional and *terra firme* forests, rarely in *várzea*.

**Food and Feeding.** Feeds on variety of insects and other arthropods, virtually all of which obtained by following army-ant swarms and seizing prey flushed by the ants. Recorded prey include crickets (Gryllidae), cockroaches (Blattidae), grasshoppers (Acrididae), spiders, centipedes (Chilopoda). Pairs, individuals, or family groups forage mostly below 1 m; multiple pairs or family groups may concentrate at some swarms; does not follow mixed-species flocks, but often found with other species at ant swarms. Considered an obligate army-ant follower, faithfully following swarms primarily of *Eciton burchelli*. Early in morning, cruising individuals, pairs or families work through the forest 1-2 m above ground in search of ants; frequently checks raiding paths and bivouac sites from the previous day, and then, if not successful, wanders more widely, immediately investigating vocalizations of conspecifics as well as of other obligate ant-followers; once located, swarms are generally followed for most of day; sometimes remains in vicinity of statary colonies that are not actively raiding, and periodically monitors activity levels of the ants. Progresses mostly by short, fluttery flights; tail regularly lowered to as much as 80 degrees below body, then rapidly flicked upwards to as much as 30 degrees above plane of body; crest frequently erected and lowered. Perches mostly 0.1-0.5 m up, often clinging laterally (upper leg flexed, lower leg extended) to slender vertical stems and pitching, yawing and pivoting with great agility; also uses horizontal perches on fallen branches, root buttresses, and stilts of stilt-rooted trees. Makes rapid, darting sallies and pounces to the ground to seize arthropods fleeing the ants, before quickly hopping or flying to another perch before ants can counter-attack; less frequently, makes short aerial sallies or sallies to foliage, vines, branches, and trunks; occasionally tosses dead leaves from litter with flicking actions of the bill to uncover arthropods taking refuge from the ants. Most prey taken are between one-third and 1.5 times the length of the bird's bill; larger items often taken to a perch away from centre of swarm and dissected or dismembered, usually by using the bill to hold one of the prey's legs and then shaking it until the leg comes off; prey are not bashed against substrate. Often wipes the bill vigorously against branches after handling large prey. Often noisy and combative at ant swarms, supplanting conspecifics and other species from perches above the most productive parts of swarm. In Mato Grosso, dominates over *Hylophylax poeclinotus*, *Pyrgilena leuconota* and non-obligate ant-followers such as *Myrmoborus myotherinus* and *M. leucophrys*, but usually subordinate to the larger *Phlegopsis nigromaculata*, Amazonian Barred Woodcreeper (*Dendrocolaptes certhia*) and Dusky-billed Woodcreeper (*Xiphorhynchus guttatus eytoni*).

**Breeding.** Little known. Nesting thought to coincide with onset of rainy season in Nov-Dec; young bird (pale gape angles, small bluish bare facial area) begging from and fed by male of a pair at Palhão from 28th Jan to 3rd Feb; examination of moult in specimens also suggests hatching either early in year or in final months of rainy season; moulting into an adult plumage between Mar and Jun. Prenuptial behaviour includes courtship-feeding of female by male.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Formerly considered Near-threatened. Status not well known; appears to be uncommon to fairly common within its small range, but is considered to be highly sensitive to human disturbance. Extensive areas of suitable habitat remain intact, but large-scale forest clearance at both N & S extremes of the species' range are reason for concern. Continued preservation in its nearly pristine state of the R Cristalino watershed (part of which is protected in the recently established Cristalino State Park) would greatly assist the conservation of this antbird.

**Bibliography.** Collar *et al.* (1994), Cory & Hellmayr (1924), Haffer (1992), Isler & Whitney (2002), Novas & Lima (1990), Ridgely & Tudor (1994), Riker & Chapman (1891), Sick (1993), Stotz *et al.* (1996), Willis (1969, 1984c), Willis & Oniki (1978), Zimmer (2003a), Zimmer, Parker *et al.* (1997).

## 202. Harlequin Antbird

### *Rhegmatorhina berlepschi*

**French:** Fourmilier arlequin

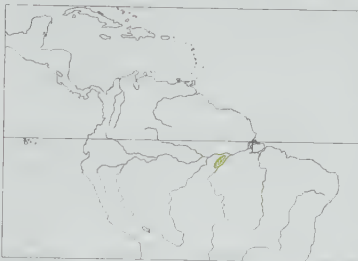
**German:** Rostbrust-Ameisenvogel

**Spanish:** Hormiguero Arlequin

**Taxonomy.** *Anoplops berlepschi* Snethlage, 1907, Vila Braga, Pará, Brazil.

May prove to be a member of an obligate ant-following clade. This and other members of genus form a well-defined species group. Monotypic.

**Distribution.** S of R Amazon near W bank of R Tapajós, in Brazil.



**Descriptive notes.** 14-15 cm. Large periorbital patch pale greyish-green; small crest. Male has crown dark brownish, crest and nape rufous-chestnut, upperparts, wings and tail olive-brown, wings edged rufous; side of head and throat black, centre of breast rufous-chestnut; neck side and remaining underparts grey, tinged olive-brown on flanks. Female is similar to male, except upperpart and wing-covert feathers with buff-edged black tips, sides and posterior underparts irregularly banded black and pale buff. **VOICE.** Loudsong (e.g. 7 notes, 3-5 seconds) begins with long flat whistle followed by more abrupt downslurred note, sub-

sequent notes become flatter and longer, final notes burry. Calls include harsh, vibrant "chirr", diminishing slightly in pitch and intensity, and abrupt "chip".

**Habitat.** Understorey of humid lowland evergreen forest (*terra firme*), to 100 m.

**Food and Feeding.** Feeds on insects (particularly orthopterans), spiders and other arthropods, virtually all of which obtained by following army-ant swarms and seizing prey flushed by them. Forages mostly below 1 m; multiple pairs or family groups may concentrate at some swarms; does not associate with mixed-species flocks, but often forages in presence of other species at ant swarms. Considered a "professional" army-ant follower, faithfully following swarms primarily of *Eciton burchelli*. Early in morning, cruising individuals, pairs or family groups work through the forest 1-2 m above ground in search of ants; frequently first checks raiding paths and bivouac sites from previous day and, if not successful, wanders more widely, investigating vocalizations of conspecifics as well as those of other obligate followers; once located, swarms are generally followed for most of day. Progresses mostly by short, fluttery flights; tail regularly lowered to as much as 80 degrees below body level, then rapidly flicked upwards to as much as 30 degrees above body; crest frequently raised and lowered. Perches mostly 0.1-0.5 m up, often clinging laterally (upper leg flexed, lower leg extended) to slender vertical stems, pitching, yawing and pivoting with great agility; also uses horizontal perches on fallen branches, root buttresses, and stilts of stilt-rooted trees. Makes rapid, darting sallies and pounces to the ground to seize arthropods fleeing the ants, before quickly hopping or flying to another perch before ants can counter-attack; less frequently, short aerial sallies or sallies to foliage, vines, branches, and trunks; occasionally tosses dead leaves from leaf litter with flicking motions of the bill to uncover prey taking refuge from ants. Most prey taken are between one-third and 1.5 times the length of the bird's bill; larger items often taken to a perch away from swarm centre and dissected or dismembered, usually by using the bill to hold a leg of a prey and then shaking it until the leg comes off; does not use the feet to hold prey, nor bashes them against substrate. Often wipes the bill vigorously against branches after handling large prey. Often noisy and combative at swarms, as conspecifics supplant both one another and other species from perches above the most productive parts of the swarm. Dominant over smaller antbirds such as *Hylophylax naevius*, but subordinate to larger *Phlegopsis nigromaculata* and, probably, also to *Skutchiea borbae*.

**Breeding.** Little known. Thought to breed late in rainy season (slightly later than *R. gymnops* occurring E of R Tapajós), with adults delaying moult until Jun-Oct dry (non-breeding) season; examination of specimens reveals presumed adults in moult in Jul-Jan, and others with slight to moderate plumage wear in Dec-Jun. Prenuptial behaviour includes courtship-feeding of female by male. Juveniles accompany parents at ant swarms for unknown period of time following fledging.

**Movements.** Resident.

**Status and Conservation.** Not globally threatened. Uncommon. Has relatively tiny range, and considered to be of high sensitivity to human disturbance. Main stronghold lies in the Tapajós National Park, which encompasses 994,000 ha. This important park is highly threatened by gold-miners, by squatters and, probably most seriously, by hydro-electric development of Tapajós Basin. Proper protection of the park and its resources will ultimately be vital to the continued survival of this species.

**Bibliography.** Cory & Hellmayr (1924), Haffer (1992), Isler & Whitney (2002), Oren & Parker (1997), Ridgely & Tudor (1994), Sick (1993), Stotz *et al.* (1996), Willis (1969), Willis & Oniki (1978).

## 203. White-breasted Antbird

### *Rhegmatorhina hoffmannsi*

**French:** Fourmilier à poitrine blanche

**Spanish:** Hormiguero Pechiblanco

**German:** Weißbrust-Ameisenvogel

**Taxonomy.** *Anoplops hoffmannsi* Hellmayr, 1907, Borba, Amazonas, Brazil.

May prove to be a member of an obligate ant-following clade. This and other members of genus form a well-defined species group. Monotypic.

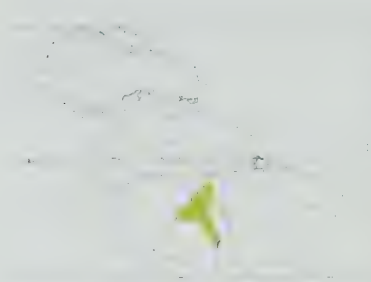
**Distribution.** C Amazonian Brazil, from E bank of lower R Madeira S through Rondônia to W Mato Grosso.

**Descriptive notes.** 14-15 cm; 28-34 g. Large periorbital patch pale greenish-yellow; fairly prominent crest. Male has forehead to nape black, upperparts, wings and tail olive-brown, wings edged rufous; side of head, throat and breast white, rest of underparts olive-grey. Female is similar in pattern to male, but top of head chestnut, streaked black, nape rufous-chestnut, feathers of upperparts, wing-coverts and underparts below breast have buff-edged black tips. **VOICE.** Loudsong (e.g. 12 notes, 4-8 seconds) begins with long, slurred whistle, followed by 6-7 shorter whistles that become more downslurred, ending with 2-4 burry notes at lower pitch; final notes sometimes omitted. Calls include harsh, vibrant "chirr", diminishing slightly in pitch and intensity, and abrupt "chip".

**Habitat.** Understorey of humid lowland evergreen forest, to 300 m. Primarily in *terra firme* forest, but occurs locally in transitional forest.

**Food and Feeding.** Feeds on variety of insects and other arthropods, virtually all obtained by following army-ant swarms and seizing prey flushed by them. Recorded prey include crickets (Gryllidae), cockroaches (Blattidae), grasshoppers (Acrididae), spiders, scorpions (Scorpiones), centipedes (Chilopoda). Forages mostly below 1 m, singly or in pairs or family groups; multiple pairs or fami-





lies may concentrate at some swarms; does not associate with mixed-species flocks, but often forages in presence of other species at ant swarms. Considered an obligate army-ant follower, faithfully following swarms primarily of *Eciton burchelli*. Early in morning, cruising individuals, pairs or family groups work through the forest 1-2 m above ground in search of ants, frequently first checking raiding paths and bivouac sites from the previous day; if not successful, wanders more widely, immediately investigating vocalizations of conspecifics and of other obligate ant-followers; once located, swarms are generally followed for most of day.

Progresses mostly by short, fluttery flights; tail regularly lowered to as much as 80 degrees below plane of body, then rapidly flicked upwards to as much as 30 degrees above body level; crest frequently erected and lowered. Perches mostly 0.1-0.5 m above ground, often clinging laterally (upper leg flexed, lower leg extended) to slender vertical stems and very agilely pitching, yawing and pivoting; also uses horizontal perches on fallen branches, root buttresses, and stilts of stilt-rooted trees. Makes rapid, darting sallies and pounces to the ground to seize arthropods fleeing the ants, then quickly hops or flies to another perch before ants can counter-attack; less frequently, short aerial sallies or sallies to foliage, vines, branches and trunks; occasionally tosses dead leaves from litter with flicking movements of the bill to uncover prey taking refuge. Most prey items are between one-third and 1.5 times the length of the bird's bill; larger ones often taken to a perch away from centre of swarm and dissected or dismembered, this usually accomplished by using the bill to hold a leg of a prey and then shaking it until leg comes off; does not use feet to hold prey, nor does it bash them against substrate. Often wipes the bill vigorously against branches after handling large prey. Often noisy and combative at swarms, with conspecifics supplanting one another and also other species from perches above swarm's most productive parts. Dominates smaller *Hylophylax poecilinotus* and non-obligate followers such as *Myrmoborus myotherinus* or *Thamnomanes saturens*, and frequently supplants White-chinned Woodcreeper (*Dendrocincla merula*), but is typically subordinate to larger *Phlegopsis nigromaculata* and *Skutchie borbae*.

**Breeding.** Little known. Breeding thought to occur well into rainy season, with fledging from Feb onwards; young recently out of nest hand-caught at Coatá on 3rd Apr, and near Borba nearly full-sized fledgling with parents at ant swarm on 29th Mar and many independent young in various stages of plumage transition in Apr; adult specimens in moult in Nov, but no moult noted in Jun-Aug (adults believed to moult before breeding season).

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Formerly considered Near-threatened. Poorly known; locally fairly common. Occupies a very small range and, as other members of genus, is considered highly sensitive to human disturbance. States of Rondônia and Mato Grosso have suffered extensive deforestation since 1980, and clearance of forest for cattle pastures and other agriculture is continuing. There are currently few formally protected areas that contain populations of this species; largest is Paeas Novos National Park, in Rondônia, which encompasses nearly 765,000 ha. Also locally common at Fazenda Rancho Grande, a small (c. 1500 ha) private reserve and ecotourist lodge near Atiquemes, in Rondônia. Continued support and protection of these critical areas is vital, and surveys aimed at locating any other sites with healthy populations of the species are needed. It was considered fairly common along R Mapiá (S of Borba, on right bank of R Madeira) in Aug 2001. Establishment of one or more reserves in this region would protect a sizeable population of this antbird, along with other regional endemics such as *Skutchie borbae* and Bull-checked Tody-tyrant (*Hemitriccus venex*).

**Bibliography.** Collar & Andrew (1988), Collar *et al.* (1994), Cory & Hellmayr (1924), Dunning (1993), Haffer (1992), Isler & Whitney (2002), Novaes (1976), Ridgely & Tudor (1994), Sick (1993), da Silva & Oniki (1988), Stotz, Fitzpatrick *et al.* (1996), Stotz, Iñáñez *et al.* (1997), Willis (1969, 1979c, 1984c), Willis & Oniki (1978), Zimmer (2003a).

## 204. Hairy-crested Antbird

### *Rhegmatorhina melanosticta*

**French:** Fourmilier chevelu **German:** Grauschopf-Ameisenvogel **Spanish:** Hormiguero Canoso

**Taxonomy.** *Pithys melanosticta* P. L. Selater and Salvin, 1880, Sarayacu, Pastaza, Ecuador.

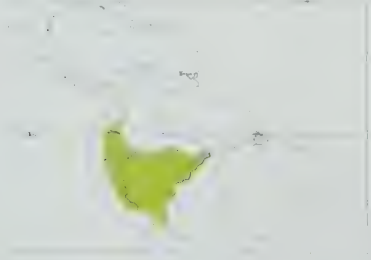
May prove to be a member of an obligate ant-following clade. This and other members of genus form a well-defined species group. Present species is morphologically and vocally the most distinct of the group. Races currently included herein possibly involve more than one species, while some of the plumage variation may be only clinal; taxonomic study needed. Birds from S of range (SE Peru to upper R Jurua, in W Brazil, and S to N Bolivia) described as race *hadia*, but appear to intergrade with *purusiana* and considered better merged with that. Three subspecies currently recognized.

**Subspecies and Distribution.**

*R. m. melanosticta* (P. L. Selater & Salvin, 1880) - SC Colombia (base of Andes from Meta S to Putumayo), E Ecuador and NE Peru (N of R Amazon in vicinity of R Napo and N of R Marañón).

*R. m. brunneiceps* Chapman, 1928 - C Peru S of R Marañón and W of R Ucayali (San Martín S to N Ayacucho).

*R. m. purusiana* (Snethlage, 1908) - E Peru (S of R Amazon, E of R Ucayali), SW Amazonian Brazil (E to R Madeira) and NW Bolivia (Pando, La Paz).



**Descriptive notes.** 14-15 cm; 29-33 g. Large periorbital patch pale bluish-white. Male nominate race has bushy crest pale grey, tinged olive, nape, neck side, upperparts, wings and tail olive-brown, wings edged rufous, tail blackish towards tip; lores, sides of head, and throat black, rest of underparts dark olive-brown; underwing-coverts olive-brown. Female similar to male, except in that anterior upperparts and wing-coverts have short black bars edged cinnamon-rufous. Subadult male lacks crest, has crown blackish, upperparts like female, underparts mixed with blackish feathers. Race *brunneiceps* is more rufescent, crown rufous

with black streaks, underparts darker; *purusiana* is paler, black bars of female smaller with pale edges indistinct. Voice. Loudsong (e.g. 6 notes, 3-6 seconds) begins with 4 long whistles that rise

and fall in intensity and pitch, ends with 2 flat harsh notes. Calls include harsh, vibrant "chirr", diminishing slightly in pitch and intensity, and abrupt "chip".

**Habitat.** Understorey of humid lowland and foothill evergreen forest; mostly below 900 m, race *brunneiceps* to 1350 m in C Peru. Primarily in *terra firme* forest, locally in transitional forest.

**Food and Feeding.** Feeds on various insects and other arthropods, virtually all of which obtained when flushed by army-ant swarms. Recorded prey include crickets (Gryllidae), cockroaches (Blattidae), grasshoppers (Acrididae), ant larvae (Formicidae), spiders. Forages mostly below 1 m; multiple pairs or family groups may concentrate at some swarms; does not associate with mixed-species flocks, but often forages in presence of other species at ant swarms. Considered an obligate army-ant follower, faithfully following swarms primarily of *Eciton burchelli*. Early in morning, cruising individuals, pairs or family groups work through the forest 1-2 m above ground in search of ants, frequently checking raiding paths and bivouac sites from previous day and, if not successful, wandering more widely, immediately investigating vocalizations of conspecifics and of other obligate ant-followers; once located, swarms are generally followed for most of day. Progresses mostly by short, fluttery flights; tail regularly lowered to as much as 80 degrees below plane of body, then rapidly flicked up to as much as 30 degrees above body level; crest frequently raised and lowered. Perches mostly 0.1-0.5 m up, often clinging laterally (upper leg flexed, lower one extended) to slender vertical stems, where it pitches, yaws and pivots very agilely; also uses horizontal perches on fallen branches, root buttresses, and stilts of stilt-rooted trees. Makes rapid, darting sallies and pounces to the ground to seize arthropods fleeing the ants, before quickly hopping or flying to another perch before ants can counter-attack; less frequently, makes short aerial sallies or sallies to foliage, vines, branches and trunks; occasionally tosses dead leaves from leaf litter with flicking bill actions to uncover arthropods taking refuge. Most prey taken are between one-third and 1.5 times the length of the bird's bill; larger items often taken to a perch away from centre of swarm and dissected or dismembered, usually by using the bill to hold a leg of the prey and then shaking it until the leg comes off; does not hold items in the feet, nor bash them against substrate. Often wipes the bill vigorously against branches after handling large prey. Often noisy and combative at ant swarms, as conspecifics supplant both one another and other species from perches above the most productive parts of the swarm. Regularly supplants *Gymnophis leucaspis* and *Pithys albifrons*, but subordinate to the larger *Phlegopsis erythroptera*.

**Breeding.** Nests in Peru span period Sept-Dec; a nearly grown juvenile with pale gape angles accompanying two adults on 20th Oct in E Ecuador. Prenuptial behaviour includes courtship-feeding of female by male. Five nests in Peru (Madre de Dios): one a shallow cup constructed entirely of narrow strips of dry palm-frond leaflets, located in natural cavity (10.1 cm deep, 10.4 × 6.1 cm wide, 63 cm above ground at lowest part of lip, 69.7 cm at highest point) of frond sheath along lower trunk of live 4.75-m *Scheelea* palm (diameter 42 cm at breast height); another a shallow bed of dry frond leaflets placed in frond-sheath cavity (10.7 cm deep, 5.6 × 8 cm wide, 100 cm above ground at lip) of live 4.25-m *Scheelea* palm (diameter 34 cm at breast height); third an almost unlined cup 0.3 m above ground in hollow formed by broken base of leaf of *S. cephalotes* palm; one an almost unlined cup 0.5 m up in hollow stump; fifth a shallow bed of shredded palm fronds inside stump 12 cm high, 17 cm in diameter, floor of cavity 9 cm below lip. Normal clutch 2 eggs, pinkish, spotted and streaked with reddish-brown, vinaceous brown or maroon; incubation presumably by both parents, period not recorded, brooding and feeding of nestlings presumably also by both; at one nest, chicks fully feathered on day 10 after hatching, nestling period 14 days for one chick, other disappeared on day 12 and not seen again, fledgling not observed again for nearly a month, then seen to be fed repeatedly by female parent at army-ant swarm over period of several days, female aggressively displaced her mate four times in 1 hour while feeding fledgling; same nest again contained 2 eggs nearly 2 months after fledgling had left.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon throughout its somewhat patchy range. Has more extensive distribution than other members of genus. Occurs in some large formally protected areas, e.g. Yasuni National Park, in Ecuador, Manu National Park and Biosphere Reserve, Pacaya-Samiria National Reserve and Tambopata-Candamo Reserved Zone, in Peru, Serra do Divisor National Park, in Brazil, and Madidi National Park, in Bolivia; also present in several privately protected areas centred around ecotourist lodges or camps, e.g. La Selva, Sacha, Yuturi Lodges, in Ecuador, and Explorap, Explorap and ACEER Lodges, near Iquitos, in Peru. Extensive unprotected intact habitat also exists throughout the range, particularly in W Brazil. Considered highly sensitive to human disturbance. Morphologically distinctive race *brunneiceps* perhaps deserves special attention in view of its small range.

**Bibliography.** Álvarez (1994), Alverson, Moskovits & Shopland (2000), Alverson, Rodríguez & Moskovits (2001), Cadena, Álvarez *et al.* (2000), Chesser (1995), Cory & Hellmayr (1924), Foster *et al.* (1994), Haffer (1992), Hilty & Brown (1986), Isler & Whitney (2002), Johns (1991), O'Neill (1974), Parker & Bailey (1991), Remsen (1986), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Servat (1996), Sick (1993), Stotz *et al.* (1996), Tello (2003), Terborgh & Weske (1969), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Willis (1969, 1984c), Willis & Oniki (1978), Willson (2000), Willson-Hillman (2003).

## 205. Chestnut-crested Antbird

### *Rhegmatorhina cristata*

**French:** Fourmilier à huppe marron

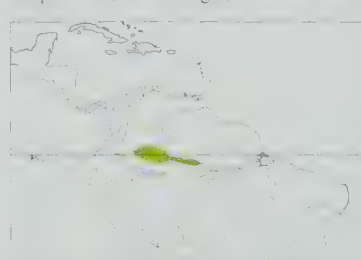
**Spanish:** Hormiguero Cresticastaño

**German:** Rostbauch-Ameisenvogel

**Taxonomy.** *Pithys cristata* Pelzel, 1868, Rio Uaupés, Amazonas, Brazil.

May prove to be a member of an obligate ant-following clade. This and other members of genus form a well-defined species group. Monotypic.

**Distribution.** SE Colombia (Vaupés, E Caquetá, N Amazonas) and adjacent W Brazil (E along R Uaupés and S, W of R Negro, to Jaú and lower R Japurá).



**Descriptive notes.** 14-15 cm. Large periorbital patch pale bluish-white; short crest. Male has crest and nuchal collar rufous-chestnut; upperparts, wings and tail dark olive-brown, wings edged rufous; forehead, lores, side of head and throat black, underparts rufous-chestnut, becoming dark olive-brown posteriorly. Female is similar to male, but with short black bars on back and lesser wing-coverts. Voice. Loudsong a series of whistles, length variable (e.g. 7-9 notes, 3.5-4 seconds), first note long and flat, second higher-pitched and down-slurred, following notes gradually become more down-slurred and lower in pitch. Calls

include harsh, vibrant "chirr", diminishing slightly in pitch and intensity, and abrupt "chip".



**Habitat.** Undergrowth of humid lowland evergreen forest, generally, perhaps always, on sandy soils; to 350 m.

**Food and Feeding.** Feeds on variety of arthropods, virtually all obtained when flushed by army-ant swarms. Recorded prey include crickets (Gryllidae), cockroaches (Blattidae), grasshoppers (Acrididae), ant larvae (Formicidae), spiders. Forages mostly below 1 m; multiple pairs or family groups may concentrate at some ant swarms; does not associate with mixed-species flocks, but often forages in presence of other species at swarms. Considered an obligate follower of army ants, faithfully following swarms primarily of *Eciton burchelli*. Early in morning, cruises through the forest individually, in pairs or in family groups, moving 1-2 m above ground in search of ants, frequently first checking raiding paths and bivouac sites from previous day; if not successful, wanders more widely, immediately investigating vocalizations of conspecifics and of other obligate followers; once located, swarms are generally followed for most of day. Progresses mostly by short, fluttery flights; tail regularly lowered to as much as 80 degrees below body level, then rapidly flicked up to as much as 30 degrees above plane of body; crest frequently erected and lowered. Perches generally 0.1-0.5 m above ground, often clinging laterally (upper leg flexed, lower one extended) to thin vertical stems, pitching yawing and pivoting with great agility; also uses horizontal perches on fallen branches, root buttresses, and stilts of stilt-rooted trees. Makes rapid, darting sallies and pounces to the ground to seize fleeing arthropods, before quickly hopping or flying to another perch before ants can counter-attack; less often makes short aerial sallies or sallies to foliage, vines, branches and trunks; occasionally tosses dead leaves from litter with flicking motions of the bill to uncover prey taking refuge from ants. Most prey are between one-third and 1.5 times the length of bird's bill; larger items often removed to a perch away from swarm centre and dissected or dismembered, normally by using the bill to hold a leg of the prey and then shaking it until the leg comes off; does not hold prey in feet, nor bash them against substrate. Often wipes the bill vigorously against branches after dealing with large prey. Frequently noisy and combative at ant swarms, where conspecifics supplant one another and other species from perches above most productive parts of swarm. Dominant over *Gymnopithys leucaspis*, *Pythys albifrons* and *Hylophylax poecilinotus*, and recorded as supplanting White-chinned Woodcreeper (*Dendrocincla merula*), but is subordinate to and readily displaced by *Phlegopsis erythroptera*.

**Breeding.** Almost nothing known. Male in breeding condition on 16th May in Colombia (Mitú); family groups with independent juveniles in mid-Aug in Brazil (São Gabriel da Cachoeira).

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Orinoco-Negro White-sand Forests EBA. Uncommon to locally fairly common. Has small range, but this currently under relatively little development pressure. The known range of this poorly known thamnophilid in Brazil has been greatly extended since 1995, when it was first found at São Gabriel da Cachoeira, while recent discovery of the species within the huge Jaú National Park (2,272,000 ha) should ensure an adequate protected area. More surveys are needed in order more accurately to assess its distributional limits and densities, both within and outside Jaú. Considered highly sensitive to human disturbance.

**Bibliography.** Alvarez (2003), Haffer (1992), Hilty & Brown (1986), Isler & Whitney (2002), Ridgely & Tudor (1994), Sick (1993), Stotz *et al.* (1996), Willis (1969, 1979c), Willis & Oniki (1978), Zimmer (2003a).

Genus *SKUTCHIA* Willis, 1968

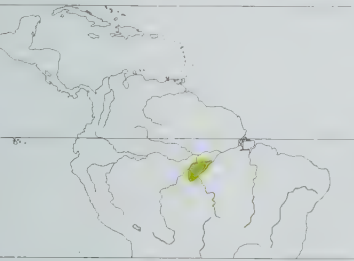
206. Pale-faced Antbird

*Skutchia borbae*

**French:** Fourmilier à face pâle **Spanish:** Hormiguero de Skutch  
**German:** Weißstirn-Ameisenvogel  
**Other common names:** Pale-faced Bare-eye

**Taxonomy.** *Phlegopsis borbae* Hellmayr, 1907. Borba, Amazonas, Brazil. May prove to be a member of an obligate ant-following clade. Formerly placed in genus *Phlegopsis*, but absence of latter's large patch of bare red skin around eye and very different male plumage led to its removal to a new, monotypic genus. Monotypic.

**Distribution.** SC Amazonian Brazil from E bank of middle/lower R Madeira E to W bank of middle/lower R Tapajós, S to E bank of lower R Aripuaña.



**Descriptive notes.** 16.5-17.5 cm; 50 g. Both sexes have elongated white feathers on forehead and lores; crown dark rufous, patch of stiff black feathers above eye, post-ocular area whitish; upperparts dark olive-brown, back with scattered black bars; wings chestnut, a few black spots on coverts; tail blackish-brown, browner at base; throat and breast cinnamon-rufous, band across upper belly barred black and white, posterior underparts dull brown. **VOICE.** Loudsong a brief series (e.g. 3 notes, 3-2 seconds) of long, slightly downslurred whistles, each diminishing in pitch and intensity, sometimes third whistle eliminated or in-

audible. Calls include loud "psit", a descending "chirr" diminishing in intensity, and a series of deep short notes delivered rapidly and usually descending in pitch.

**Habitat.** Understorey of humid lowland evergreen forest (*terra firme*), to 150 m. Territories near Borba were situated in upland forest with notable abundance of understorey palms.

**Food and Feeding.** Not well known. Feeds on arthropods, probably also small lizards, almost all of which obtained when flushed by swarms of army ants. Pair-members, individuals, or family groups forage mostly 0-1 m above ground, occasionally ascending to 3 m to survey ant swarm before dropping low to forage; does not associate with mixed-species flocks, but often forages in presence of other species at army-ant swarms. Considered an obligate army-ant follower, most commonly following swarms of *Eciton burchelli*; behaviour not well known, but reportedly similar to that of *Rhegmatorhina*, *Phlegopsis* and *Gymnopithys*. Perches mostly 10-40 cm above swarm on slender vertical saplings (on which it pitches, yaws and pivots with great adroitness) or on horizontal perches; sallies or pounces to seize prey, then rapidly returns to a perch before ants can counter-attack. Reputed to be more sedate in its movements than other obligate ant-followers, and more prone to hopping on ground at edge of swarm. At sites near Coatã and Sucundari (Amazonas),

aggressively defended the most productive central zones over ant swarms, dominating over smaller antbirds such as *Rhegmatorhina hoffmannsi*, *Phlegopsis nigromaculata* and *Hylophylax poecilinotus*, as well as larger dendrocolaptids such as Plain-brown and White-chinned Woodcreepers (*Dendrocincla fuliginosa*, *D. merula*) and Amazonian Barred and Hoffmann's Woodcreepers (*Dendrocolaptes certhia*, *D. hoffmannsi*).

**Breeding.** Virtually unknown. Nearly grown juvenile accompanied pair of adults at ant swarm on 12th Apr, indicating nesting in middle of rainy season. Courtship feeding has been reported.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Status not well known; appears to be uncommon to rare within its small total range. Considered highly sensitive to human disturbance. Principal protected stronghold is Tapajós National Park (994,000 ha), which is large enough to support a viable population; this park is highly threatened by gold-miners, squatters and, probably most seriously, hydro-electric development of the Tapajós Basin; effective protection of the park is critical to continued survival of this species, as well as that of *Rhegmatorhina berlepschi*. It may be most common in vicinity of Borba (the type locality), and has recently been found at a number of locations in this region, including to S along R Mapiá; none of this area is adequately protected, and human settlement and resulting deforestation are increasing. Establishment of one or more reserves in this region is highly desirable, and would also help to protect significant populations of other regional endemics such as *Rhegmatorhina hoffmannsi* and Buff-cheeked Tody-tyrant (*Hemitriccus senex*). Surveys are required in order to understand the natural history and the precise distribution of this thamnophilid.

**Bibliography.** Cory & Hellmayr (1924), Isler & Whitney (2002), Morrone (2000), Oren & Parker (1997), Ridgely & Tudor (1994), Sick (1993), Stotz *et al.* (1996), Whitney (2003a), Willis (1968a, 1969), Zimmer (2003a).

Genus *PHLEGOPSIS* Reichenbach, 1850

207. Black-spotted Bare-eye

*Phlegopsis nigromaculata*

**French:** Fourmilier maculé **Spanish:** Hormiguero Maculado  
**German:** Tropfenmantel-Ameisenvogel

**Taxonomy.** *Myiothera nigro-maculata* d'Orbigny and Lafresnaye, 1837, Plains of Guarayos, Santa Cruz, Bolivia.

May prove to be a member of an obligate ant-following clade. Occasionally interbreeds with *P. erythroptera*; form described as *P. barringeri* ("Argus Bare-eye") shown to be a hybrid between the two. S populations (Rondonia and Mato Grosso S to NE Bolivia) tentatively included in race *bowmani*, but may represent an undescribed race; taxonomic study needed. Four subspecies recognized.

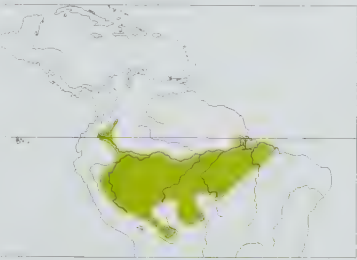
**Subspecies and Distribution.**

*P. n. nigromaculata* (d'Orbigny & Lafresnaye, 1837) - SC Colombia (Meta S along E base of Andes to Putumayo and extreme S Amazonas), NE Ecuador (N of R Napo), E Peru (except W Loreto), SW Amazonian Brazil (E to R Madeira) and NE Bolivia (Pando, La Paz, Beni, Cochabamba, W Santa Cruz).

*P. n. bowmani* Ridgway, 1888 - SC Amazonian Brazil (R Madeira E to R Xingu, S to Rondonia and W & N Mato Grosso) and NE Bolivia (N Santa Cruz).

*P. n. confinis* J. T. Zimmer, 1932 - R Xingu E to R Tocantins and R Araguaia.

*P. n. paraensis* Hellmayr, 1904 - E Brazil (S Amapá, W Marajó I and S of R Amazon, E from R Tocantins to W Maranhão).



**Descriptive notes.** 16.5-17.5 cm; 42-51 g. Bare periorbital patch red. N nominate race has head and neck down to centre of belly black; upperparts and wing-coverts light olive, covered with large, oval-shaped (longer than wide) black spots edged pale yellowish olive-brown; flight-feathers cinnamon-rufous, tertials with large black spots; tail rufous-chestnut; lower underparts olive-brown, becoming cinnamon-rufous posteriorly; underwing-coverts mixed olive-brown and black. Female is like male. Races vary mainly in colour of upperparts and size and shape of spots: *confinis* resembles nominate but smaller, more heavily spotted,

bare facial patch more extensive; *bowmani* has upperparts brighter, more yellowish, spots wider than long (larger and triangular in W of range); *paraensis* is light rufous-brown above, spots small and rounded with cinnamon edges, larger bare facial patch. **VOICE.** Loudsong a short series (e.g. 3 notes, 2-6 seconds) of moderately long, flat, rich whistles, each slightly lower in pitch and becoming harsher in quality. final note typically drops in intensity, number of notes variable. Calls include abrupt "chip", a long (e.g. 0.7 seconds) "chirr" falling in pitch and intensity, and a short series (e.g. 4 notes) of lengthening notes that drop in pitch.

**Habitat.** Understorey of humid lowland and foothill evergreen forest, mostly below 600 m, locally to 900 m. In W of range found primarily in floodplain-forest (*várzea*, transitional), and replaced in many areas of upland forest by *P. erythroptera*; in Brazil E of R Madeira, occurs in *terra firme*, transitional forest and *várzea* and *igapó* floodplain-forest. In all parts of range, may follow army ants into adjacent tall second-growth woodland.

**Food and Feeding.** Feeds on variety of insects and other arthropods, also on small reptiles; virtually all food obtained when flushed by swarms of army ants. Recorded prey in Brazil include grasshoppers (Acrididae), crickets (Gryllidae), katydids (Tettigoniidae), cockroaches (Blattidae), hemipterans, beetles (Coleoptera), termites (Isoptera), ant larvae (Formicidae), spiders and their egg sacs, scorpions (Scorpiones), centipedes (Chilopoda), and small lizards. Pair-members, individuals, or family groups forage mostly below 1 m (c. 75%), but subordinate individuals often displaced to higher perches, occasionally to 5 m, seldom higher; multiple pairs and family groups (up to 22 individuals) may simultaneously attend a single ant swarm; does not associate with mixed-species flocks, but often forages in presence of other species at ant swarms. Considered an obligate army-ant follower, rarely seen away from ants; once recorded as remaining near domestic pigs at forest edge, presumably to obtain prey flushed by the mammals. Wanders widely in search of ants early in morning, frequently first checking raiding paths and bivouac sites from previous day; if not successful, wanders more widely, immediately investigating vocalizations of both conspecifics



and other obligate ant-followers; once a nomadic swarm is located, birds stay with it for most or all of the day, sometimes leaving to monitor nearby statary swarms. Progresses by heavy hops and short, fluttery flights. Selects mostly slender perches 1-4 cm in diameter, using horizontal and inclined perches about as often as vertical ones, but more adept at using latter than is its larger congener *P. erythroptera*. Most attack manoeuvres are sallies or sally-pounces of less than 0.5 m from perch to ground, where prey seized by a quick stab of the bill, or after a short lunge or series of rapid bounding hops after more mobile prey, before returning to a perch; less frequently, makes short aerial sallies, or sallies to foliage, trunks, branches, vines or other surfaces, or perch-gleans by reaching up, out or down; occasionally hops on ground between columns of ants and flips leaf litter with its bill to uncover hidden prey, but this behaviour less frequent than in *P. erythroptera*. Dominant over most other ant-following antbirds, including *Pyrgilena leuconota*, but subordinate to *Skutheia horbae* and *P. erythroptera* where co-occurring with these. As with most other dominant ant-followers, submissive behaviour and family sociality are better developed than in subordinate species, probably facilitating shared foraging opportunities by multiple pairs or families over same swarm; agonistic behaviour towards conspecifics nevertheless frequent.

**Breeding.** Nest found in Jul in Colombia; breeds in Aug-Mar in Brazil and Oct-Feb in Peru; in Ecuador nest found in Apr, and gonadal condition of females and presence of fledglings or juveniles indicate season Oct-Jun, and possibly throughout year (based on gonadal condition of males). Recent observation of apparent "helper" at nest attended by 3 adults (female, 2 males) in Peru (Cocha Cashu). Nest in Colombia an open cup constructed of dry bamboo leaves, lined with small lant fibres, placed 1 m above ground inside hollow 10 cm deep in rotten stump, partially covered by leaves of an epiphytic aroid; in Ecuador a bowl-shaped mat of palm leaflets and thin vines laced in stump of stilt-root palm (*Iriarteia deltoidea*) that had rotted such that its centre formed up-like cavity with opening on one side; in Peru, one nest was composed of a few small pieces of brown palm frond, making a loose flat lining inside low vertical cavity (internal depth 10 cm, diameter 7-7.3 cm) of live tree 8 cm above ground, four others also loosely lined flat structure, in two cases of thin strips of brown palm fronds, and placed 0.3-0.5 m up in hollow of dead stump. Normal clutch 2 eggs, pale pink with dense, wavy mauve lines (Ecuador), or vinaceous with heavy purple streaks and spots (Colombia); incubation by both parents, usually by male in morning and probably again in late afternoon, by female in middle of day and again through night, incubation period not recorded; both also share in brooding and feeding of chicks, nestling period at least 13 days; within 1 month of first days of incubation stub-tailed fledglings appear at army-ant swarms, here led by parents, and within a further month are capturing some of their own food; young remain with parents at ant swarms for at least 3-5 months. Nest success thought to be higher than in most small forest birds; of 3 nests in a study in Peru, 2 successfully fledged both young, third survived on at egg stage. In Amazonian Brazil low annual adult mortality (estimated at 15%), perhaps due to dominance at ant swarms over other ant-following species, resulting in reduced interspecific competition and starvation.

**Movements.** None recorded; presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common throughout most of its extensive range. Occurs in several formally protected large areas, e.g. Amacayacu National Park, in Colombia, Manu National Park and Biosphere Reserve and Tambopata-Candamo Reserved Forest, in Peru, Pácaas-Novos and Tapajós National Parks, Cristalino State Park and Caxiuanã National Forest, in Brazil, and Madidi and Noel Kempff Mercado National Parks, in Bolivia. Also present in several privately protected reserves centred around ecotourist lodges or camps, e.g. Lavabeno and Imuyacocha, in Ecuador, and Explorama, Explorapo and ACEER Lodges, near Putitos, in Peru. In addition, range encompasses extensive areas of intact habitat which, although not formally protected, seem to be at little risk of development in near future. Considered to be of medium sensitivity to human disturbance.

**Bibliography.** Alverson *et al.* (2001), Bates *et al.* (1989), Cadena, Londoño & Parra (2000), Chesser (1995), Cory (1991), Hilty (1924), Foster *et al.* (1994), Graves (1992), Haffer (1992, 1997), Hill & Greeney (2000), Hilty & Brown (1986), Isler & Whitney (2002), Killeen & Schulenberg (1998), Novas (1970, 1973, 1974, 1976), O'Neill (1974), Pearson (1974), Oniki (1972a), Oniki & Willis (1983b), Oren & Parker (1997), Parker & Bailey (1991), Pearson (1977b), Remsen *et al.* (1986), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Schubert *et al.* (1965), Servat (1996), Sick (1993), da Silva *et al.* (1990), Stotz, Fitzpatrick *et al.* (1996), Stotz,anyon *et al.* (1997), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Terborgh, Fitzpatrick & Emmons (1984), Terborgh, Robinson *et al.* (1990), Willis (1979a, 1979c), Willis & Oniki (1978), Willson-Tallman (2003), Zimmer, J.T. (1932c), Zimmer, K.J. (2003a), Zimmer, K.J., Parker *et al.* (1997).

## 208. Reddish-winged Bare-eye

### *Phlegopsis erythroptera*

**French:** Fourmilier a miroir roux

**Spanish:** Hormiguero Alirrojo

**German:** Rotspiegel-Ameisenvogel

**Taxonomy.** *Formicarius erythropterus* Gould, 1855, interior of British Guiana; error = Rio Negro, Brazil.

May prove to be a member of an obligate ant-following clade. Occasionally interbreeds with *P. nigromaculata*; form described as *P. harringeri* ("Argus Bare-eye") shown to be a hybrid between the two. Two subspecies recognized.

**Subspecies and Distribution.**

*P. e. erythroptera* (Gould, 1855) - SE Colombia (S from Meta and Guainia) and SW Venezuela (S Amazonas) S to NE Peru (Loreto) and NW Amazonian Brazil (E to both banks of upper and W bank of lower R Negro).

*P. e. ustulata* Todd, 1927 - E Peru (locally on S bank of R Amazon in Loreto, and in Ucayali), SW Amazonian Brazil (Amazonas E to R Madeira) and extreme NW Bolivia (NW Pando).

**Descriptive notes.** 17-18.5 cm; 50-58 g (possibly varies by sex). Bare periorbital patch red. Male is black, except for thin white feather edges on upperparts and lesser wing-coverts, broad rufous tips of median and greater wing-coverts and tertials, rufous bases of flight-feathers, and dark reddish-brown tips of uppertail-coverts; underwing-coverts rufous-brown. Female has crown, upperparts and wing-coverts very dark reddish-brown, greater and median coverts tipped white; flight-feathers and tail blackish-brown, pale band across remiges, tertials tipped white; centre of throat white, tinged tawny; neck side down to centre of belly rufous, flanks and posterior underparts rufous-brown. Subadult male is patterned like adult male, but greyer and tinged rufous, back feathers broadly edged cinnamon-rufous, greater

wing-coverts and flight-feather bases cinnamon-rufous. Race *ustulata* male has uppertail-coverts all black, female has wing-covert tips pale buff. **VOICE.** Loudsong a series (e.g. 5 notes, 2-7 seconds) of rich whistles, initial 3 notes becoming longer and each slightly lower in pitch, final note drops in intensity, number of notes variable (4-10), final notes sometimes becoming harsher. Calls include abrupt "chip", and rather short (less than 0.5 seconds) sharply downslurred "chirr" of relatively constant intensity.

**Habitat.** Understorey of humid lowland evergreen forest, to 550 m. Occurs in *terra firme* forest throughout range, and in W Amazonia replaced in floodplain-forest by *P. nigromaculata*. In upper R Negro region found in stunted woodland growing on white-sand soil (Amazonian *caatinga*), as well as in taller forest on richer soils; similarly, can be found in "varillal" (a very dense, stunted type of *terra firme* forest growing on white-sand soil) near Iquitos, in NE Peru.

**Food and Feeding.** Feeds on insects and other arthropods, virtually all of which obtained when flushed by swarms of army ants. Recorded prey include orthopterans (Gryllidae, Acrididae), cockroaches (Blattidae), spiders and their egg cases, lepidopteran larvae, and larvae of ants (Formicidae). Pair-members, individuals, or family groups forage mostly below 1 m, sometimes to 3 m; occasionally, multiple pairs or family groups attend a single ant swarm, but this relatively rare compared with other obligate ant-followers; male and female of a pair often attend separate swarms; does not associate with mixed-species flocks, but often forages in presence of other species at army-ant swarms. Considered an obligate follower of army ants (mostly *Eciton burckellii*, but also *Labidus praedator*), rarely seen away from them. Roams widely in search of ants early in morning, frequently first checking raiding paths and bivouac sites from previous day; if not successful, wanders more widely, immediately investigating vocalizations of conspecifics, as well as those of other obligate ant-followers; once a nomadic swarm is located, stays with it for most or all of the day, sometimes leaving to monitor nearby statary swarms. Progresses by heavy hops and short, fluttery flights; frequently flicks tail rapidly upwards from 45 degrees below plane of body to just above it. Selects mostly slender perches 1-5 cm in diameter, and uses horizontal or inclined perches at least as often as vertical ones. Most attack manoeuvres are sallies of less than 1.5 m from perch to ground; prey seized directly from leaf litter with quick stab of the bill or by short horizontal lunge, followed by a quick hop or flight back up to another perch before ants able to counter-attack. Occasionally makes short aerial sallies after flushed prey, also sallies to or perch-gleans from foliage, vine, trunk or root surfaces; also hops on ground between columns of ants, flipping leaf litter with its bill to uncover hidden prey. Usually dominant over other obligate ant-following birds, including *P. nigromaculata*, which it displaces to higher perches or to periphery of swarm in areas where the two species come into contact; occupies choice foraging zones low over swarm centre. Intraspecific aggression frequent between pairs or non-mated individuals at swarms.

**Breeding.** Almost unknown. Short-tailed juvenile collected in Jan in Colombia (Putumayo); record of short-billed fledgling accompanied by adults on 2nd Jun in Peru (Loreto); gonadal condition of females suggests season Oct-Jun in E Ecuador. Nest and eggs not described.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Uncommon throughout its large range. Regions occupied include some large protected reserves, e.g. La Neblina National Park, in Venezuela, Yasuni National Park, in Ecuador, and Serra do Divisor, Pico da Neblina and Jaú National Parks, in Brazil; also extensive areas of intact habitat that are not formally protected, but appear to be at little risk of being developed in near future. Considered to be of high sensitivity to human disturbance.

**Bibliography.** Alvarez (1994), Graves (1992), Hilty (2003a), Hilty & Brown (1986), Isler & Whitney (2002), Johns (1991), Parker & Remsen (1987), Remsen (1986), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Sick (1993), Stotz *et al.* (1996), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Willard *et al.* (1991), Willis (1984c), Willis & Oniki (1978), Zimmer, J.T. (1932c), Zimmer, K.J. (2003a).

## Genus *PHAENOSTICTUS* Ridgway, 1909

### 209. Ocellated Antbird

#### *Phaenostictus mcleannani*

**French:** Fourmilier ocellé **German:** Halsband-Ameisenvogel **Spanish:** Hormiguero Ocelado

**Taxonomy.** *Phlogopsis McLeannani* [sic] Lawrence, 1860, Lion Hill Station, Colón, Panama. Relationships uncertain; appears to be related to obligate ant-followers, e.g. *Phlegopsis*, *Rhematorhina*. Described race *chocoanus* (E Panama, NW Colombia) appears indistinguishable from nominate. Three subspecies recognized.

**Subspecies and Distribution.**

*P. m. saturatus* (Richmond, 1896) - E Honduras (Gracias a Dios, Olancho) S to Costa Rica (Caribbean slope, in N also Pacific slope) and extreme W Panama (W Bocas del Toro).

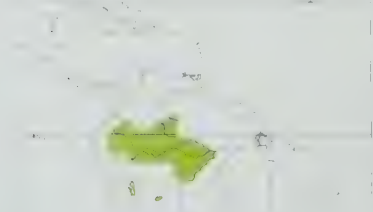
*P. m. mcleannani* (Lawrence, 1860) - C & E Panama (E from Veraguas on Caribbean slope, Panamá on Pacific slope) and NW Colombia (S along Pacific slope to Valle del Cauca, and on N Andean slope in Córdoba and Antioquia).

*P. m. pacificus* Hellmayr, 1924 - extreme SW Colombia (Cauca, Nariño) and NW Ecuador (Esmeraldas).



**Descriptive notes.** 19-19.5 cm; 48-54 g. Large bare periorbital area blue. Nominative race has crown olive-grey, nape rufous; upperparts and wing-coverts olive-brown, with large black tips edged pale buff to cinnamon-buff; flight-feathers brownish-black, edged olive-brown, tail brownish-black, outer feathers tipped white; rear ear-coverts and neck side to chin, throat and upper breast black, nuchal collar and lower breast rufous, becoming olive-brown posteriorly, large black subterminal spots from breast to flanks and belly; underwing-coverts olive-brown. Female resembles male. Subadult male has crown blackish, feathers edged white,

upperparts more rufescent than adult, pale feather edges broader, less distinct colour pattern below, black spots unclear or absent. Race *saturatus* is darker, nape more brownish-grey; *pacificus* has upperparts darker and more rufescent, crown sooty brown, breast lighter. **VOICE.** Loudsong a series (e.g. 15 notes, 3-1 seconds) of short, rich whistles that gradually become even shorter, except final



of belly rufous, flanks and posterior underparts rufous-brown. Subadult male is patterned like adult male, but greyer and tinged rufous, back feathers broadly edged cinnamon-rufous, greater



notes lengthen, pitch and intensity increase through most of song but drop at end, number of notes variable, final note sometimes repeated and becoming harsher. Calls include abrupt "chip", and relatively short (less than 0.5 seconds) sharply downslurred "chirr" diminishing in intensity.

**Habitat.** Understorey of humid and wet lowland and foothill evergreen forest and adjacent tall second-growth woodland; from sea-level to 1200 m in Costa Rica, to 900 m in Panama and Colombia, mostly below 400 m but locally to 700 m in Ecuador. Occasionally ventures into shaded, semi-open areas such as regenerating guava or cacao plantations.

**Food and Feeding.** Feeds on insects and other arthropods, also small lizards, almost all of which obtained when flushed by army ants. Most common prey are various orthopterans (Gryllidae, Acrididae, Tettigoniidae), as well as cockroaches (Blattidae), stick-insects (Phasmatidae) and spiders; however, centipedes (Chilopoda), scorpions (Scorpiones), whipscorpions (Uropygi, Amblypygi), and ants (Formicidae) and other hymenopterans also recorded. Lepidopteran larvae and other insects which rarely occur in leaf litter seldom taken; sow bugs (Isopoda) and millipedes (Diplopoda), although both common in litter, also seldom taken. Most prey 18 mm or less in length. Pair-members, individuals, family groups, or loose associations of up to 4 pairs or families forage below 2 m above ground, rarely higher (recorded up to 6 m above ground; c. 85% of recorded perches over ants 0-0.4 m up; does not associate with mixed-species flocks, but often forages in presence of other species at ant swarms. Considered to be an obligate follower of army ants (mostly *Eciton burchellii*), rarely seen away from swarms. Wanders widely early in morning, frequently first checking raiding paths and bivouac sites from previous day; if not successful, roams more widely, immediately investigating vocalizations of both conspecifics and other obligate ant-followers; once a nomadic swarm located, stays with it for most or all of day, sometimes leaving to investigate statary swarms or even other nomadic swarms up to 1 km away; is probably always aware of approximate whereabouts of many ant swarms, even when following one main one. Progresses by heavy hops and bounds interspersed with short, fluttering flights; selects mostly slender horizontal, inclined or vertical perches 1-3 cm in diameter; despite its relatively large body size, readily clings laterally to thin vertical stems, pitching or swinging on such perches to change orientation. Most attack manoeuvres are quick sallies of less than 0.5 m (occasionally to 2 m or more) to the ground, where prey seized by quick stab of the bill, the bird then hopping or flying rapidly up to a perch before ants can counter-attack; also sallies to root buttresses, trunks, logs, stems, lianas and foliage; less frequently, perch-gleans prey by reaching up, out or down to those substrates or to the ground, or by short horizontal lunges; sometimes hops on ground between columns of ants, and tosses leaf litter with its bill to reveal hidden prey. Small items usually consumed immediately, without handling; prey more than 10 mm in length are often mandibulated and dissected; regularly wipes the bill on branches following dissection or consumption of particularly large or juicy prey; flicks tail up from plane of body to c. 30 degrees above horizontal, perhaps only in alarm. Usually dominates other ant-following birds, and tends to occupy central foraging zones over swarm; particularly aggressive towards smaller *Gymnophthys leucaspis*, regularly supplanting it from perches, also regularly harasses Grey-headed Tanager (*Eucometis penicillata*) and Plain-brown Woodcreeper (*Dendrocincla fuliginosa*); subordinate to larger Rufous Motmot (*Baryphthengus martii*) and Squirrel Cuckoo (*Piaya cayana*), both of which are dependent on horizontal perches usually found higher above ground, also subordinate to the terrestrial Rufous-vented Ground-cuckoo (*Neomorphus geoffroyi*), Black-crowned and Rufous-crowned Antpittas

(*Pittasoma michleri*, *P. rufopileatum*), as well as occasionally to some of the larger *Dendrocolaptes* and *Xiphorhynchus* woodcreepers.

**Breeding.** Sightings of fledglings suggest egg-laying in Apr-Dec in Panama (earliest record of young out of nest 2nd Jun in Canal Zone, with other fledglings being fed in Jan); possibly breeds in all months in wetter parts of Panama and Colombia, with some pairs potentially rearing 3-4 broods in a year. Complex social structure, patrilineal clans of up to 8 or more individuals developing around a successful pair, with young males and their recruited mates tolerated both during and outside breeding season for several years; when densities higher than usual, "superimposed" pair (simplest form of which a young male offspring of main pair along with his mate) co-occupies territory of main pair, and together they form nucleus of clan. Nesting area c. 1500 m in diameter. Nest not definitely recorded; a May nest in Panama was probably of this species, a neat open cup of slender strands, sunk in ground between tree buttresses; contained one heavily speckled egg. Normal clutch probably 2 eggs (based on recently fledged young accompanying ringed parents), sometimes 1; male of mated pair tends to disappear from ant swarms for extended periods in morning and again in late afternoon, suggesting male incubation during those periods, female presumably incubates through night (as with other thamnophilids) and in one daytime shift; incubation period estimated at 16 days; both parents share in brooding and feeding of chicks, estimated nestling period c. 14 days; fledglings first attend ant swarms at estimated 2-3 weeks after hatching, typically hide in treefalls and between root buttresses, where fed by parents, by 4 weeks after leaving nest obtaining most food on their own, and parents reneat; young continue to associate with parents when no longer being fed and after having acquired adult plumage; females usually remain for 6-8 months, during which time they wander to distant ant swarms and eventually pair with male from another clan. Nesting success thought to be low; in a study on Barro Colorado I (Panama), 87% of detected nesting attempts failed.

**Movements.** Presumed resident.

**Status and Conservation.** Not globally threatened. Generally uncommon to rare. Current status in Colombia not known. Considered rare to uncommon in Ecuador, where has been suggested that the species merits conservation status of Vulnerable on grounds of its limited range, general scarcity, and dependence on extensive blocks of forest; small populations may be protected in Awá Forest Reserve and lower parts of Cotacachi-Cayapas Ecological Reserve, but true status and numbers at these sites not determined. Generally considered more numerous in Central America, where it remains uncommon but with populations in some large protected areas, e.g. La Selva Biological Reserve, Braulio Carrillo National Park and La Amistad International Park, in Costa Rica, and Comarca Kuna Yala Indigenous Reserve and Soberanía and Darién National Parks, in Panama. Considered to be highly sensitive to human disturbance. This species has undoubtedly suffered some range fragmentation and contraction as a result of extensive deforestation throughout its range. It should be monitored for signs of significant population decline. Continued protection of existing parks and reserves is vital to the long-term viability of this thamnophilid.

**Bibliography.** Blake & Loiselle (1991, 2001), Cody (2000), Cory & Hellmayr (1924), Eisenmann (1952), Granizo (2002), Hilty & Brown (1986), Howell (1957), Isler & Whitney (2002), Johnson (1954), Karr (1977, 1990), Karr *et al.* (1978), Loiselle (1988), Richmond (1893), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgway (1911), Schemske & Brokaw (1981), Slud (1960, 1964), Stiles & Skutch (1989), Stotz *et al.* (1996), Wetmore (1972), Willis (1973b, 1974a, 1980, 1983b), Willis & Eisenmann (1979).

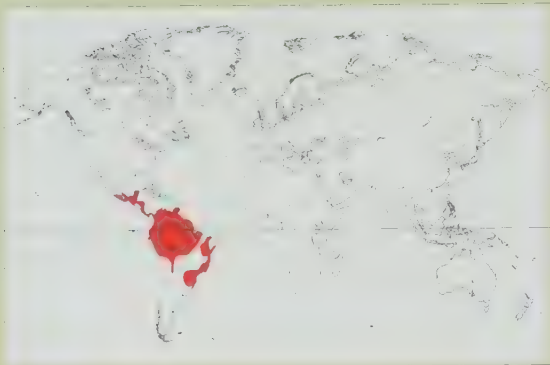


## Class AVES

## Order PASSERIFORMES

## Suborder FURNARI

## Family FORMICARIIDAE (GROUND-ANTBIRDS)



- Fairly small to medium-sized, plump, predominantly terrestrial birds with short, rounded wings, long legs, short tail, large head and eyes; plumage mostly dull, with rufous, olive, brown, black and white dominant.
- 10-24 cm.



- Neotropical Region.
- Forest and woodland.
- 7 genera, 63 species, 172 taxa.
- 11 species threatened; none extinct since 1600.

## Systematics

The Formicariidae was formerly considered to include not only the ground-antbirds, but also the typical or "true" antbirds (Thamnophilidae). Analyses of syringeal morphology, however, combined with recent results obtained from DNA-DNA hybridization studies, indicate that the two groups should, in fact, be placed in two different parvorders. One is the Thamnophilida, containing the single family Thamnophilidae. The other parvorder, the Furnariida, would then contain five families. These are the ovenbirds (Furnariidae), the woodcreepers (Dendrocolaptidae), the gnateaters (Conopophagidae), the tapaculos (Rhinoecryptidae) and the ground-antbirds (Formicariidae), with the last three of those being united in a superfamily Formicarioidea.

There is further evidence to support the separation of the typical antbirds from the ground-antbirds. A study in Amazonia found that certain species of trematode parasitized members of only one or the other of the two families. The same is the case for a genus of chewing lice, *Formicaphagus*: although lice of this genus have been discovered on both typical antbirds and ground-antbirds, none of the three species known to occur on multiple hosts has been found in both antbird families. Interestingly, *Formicaphagus* species have not been found to parasitize other families in the parvorder Furnariida. This may suggest that typical antbirds and ground-antbirds are more closely related to each other than is currently believed, but it could also be evidence that these lice and their hosts do not co-speciate. There is, however, one genus of chewing lice, *Formicaricola*, that is known to occur only on antthrushes of the genus *Formicarius*.

Three of the seven genera currently treated in the Formicariidae appear to be rather distantly related to the rest. DNA-DNA hybridization data indicate that *Formicarius* and *Chamaeza* split from the primary lineage, represented by *Grallaria*, *Hylopezus*, *Myrmothera* and *Grallaricula*, at a very early stage, shortly after the divergence of the branches leading to the Rhinoecryptidae, the Conopophagidae and the Thamnophilidae. DNA-sequence data suggest that *Formicarius* and *Chamaeza* are, in fact, closer to the Rhinoecryptidae than they are to the other ground-antbirds. The genus *Pittasoma* is quite unlike *Grallaria* in colour pattern and sternal structure, and work on DNA sequencing indicates that it is so close to the gnateater genus *Conopophaga* that it would be better placed in the Conopophagidae. It seems likely that a different arrangement of families will result from a genetic resolution of the deep phylogenetic

branches of ground-antbirds and related families, but DNA sequences that are long enough to resolve such old relationships have yet to be compared.

The monotypic antbird genus *Myrmornis* has often been placed with the ground-antbirds. Its voice and behaviour, however, strongly suggest that it belongs with the typical antbirds in the Thamnophilidae, and that is, indeed, the family in which most recent authors have included it.

The relationships of the four genera within the *Grallaria* lineage were elucidated by studies using DNA-sequence data, as well as morphological characters. It was found that *Hylopezus* and *Myrmothera* are sister-genera, so close, in fact, that *Hylopezus* might be a doubtfully valid genus, and that



Of the 63 species currently placed in the Formicariidae, 51 are known as "antpittas". These birds are subdivided into five genera, four of which seem to form a distinct lineage that long ago diverged from the *Formicarius* and *Chamaeza antthrushes*. Antpittas are found in forested areas at almost all elevations, from sea-level to almost 4000 m, but reach their greatest diversity in the wet cloudforests of the Andes, where their haunting vocalizations are a characteristic sound. The diminutive **Slate-crowned Antpitta** is found from Venezuela south to northern Peru.

[*Grallaricula nana nana*, Cordillera Sabanilla, Zamora-Chinipe, Ecuador.  
Photo: Doug Wechsler/VIREO]



According to current taxonomy, both these birds are **Rufous Antpittas**. As can be seen, however, the Ecuadorian bird is quite a different colour from the Bolivian bird. This substantial variation in plumage is exceeded by vocal variation, to the extent that two or more species are likely to be involved. Examples such as this suggest that further research into patterns of variation in ground-antbirds is a priority.

[Left: *Grallaria rufula rufula*, Cordillera Sabanilla, Zamora-Chinchipec, Ecuador.  
Photo: Doug Wechsler/VIREO

Right: *Grallaria rufula cochabambae*, Coroico road, Bolivia.  
Photo: Barry E. Wright]



*Grallaricula* is their closest relative. This clade forms a sister-lineage to *Grallaria*.

The antpitta genus *Grallaria*, with 31 species, is the largest of the family, and attempts by taxonomists to subdivide it have so far been largely unsuccessful. The narrow elevational distributions of these antpittas in the Andes, combined with their poor flying abilities, render them prone to speciation. Indeed, as many as six entirely new species of these relatively large birds have been discovered since 1955: these are the Tachira (*Grallaria chthonia*), Elusive (*Grallaria eludens*), Chestnut (*Grallaria blakei*), Pale-billed (*Grallaria carrikeri*), Cundinamarca (*Grallaria kaestneri*) and Jocotoco Antpittas (*Grallaria ridgelyi*). This fact alone makes it plausible that even more remain to be

discovered. Although, with a growing knowledge of the vocalizations of Neotropical birds, it would seem increasingly difficult for a secretive bird to remain elusive, several antpittas have very restricted ranges, many sing for only a few months of the year, and large parts of the Andes remain inaccessible. In addition, geographical variation in song occurs within some species, such as the Scaled Antpitta (*Grallaria guatemalensis*), the Variegated Antpitta (*Grallaria varia*), the Rufous Antpitta (*Grallaria rufula*) and the Tawny Antpitta (*Grallaria quitensis*), suggesting that each of these does, in fact, consist of more than a single species.

Only 18 species of *Grallaria* were included in the molecular-genetic studies mentioned above, but some interesting results

All ground-antbirds look plump and portly, with long legs, large eyes and short or very short tails.

Beyond these general similarities, antthrushes and antpittas are easily distinguished by major differences in posture and behaviour. Unlike antpittas, which usually hop, antthrushes walk with a slow strutting action. Moreover, they tend to have relatively longer and straighter bills, and their cocked tails are much more conspicuous, as illustrated by this **Black-headed Antthrush**.

[*Formicarius nigricapillus destructus*, Cauca, Colombia.  
Photo: J. S. Dunning/ARDEA]







Compared with antthrushes, antpittas are generally plumper, with even longer legs and even shorter tails. Their posture is also much more upright, and thus they can look quite tall. With the exception of *Pittasoma*, all antpittas belong to the *Grallaria* lineage (49 of 51 species). The largest genus is *Grallaria* itself, within whose 31 species there are two well-differentiated clades. One of these contains relatively small and boldly patterned species, the other contains five large and heavily barred species. The **Undulated Antpitta** is a classic example of the latter group. In common with most antpittas, its plumage is relatively dull, but nevertheless rather beautiful, with subtle hues and distinct barring. Antpittas are not related to the Old World pittas (*Pittidae*), from which they derive their name. Although very different in coloration, these two groups are similar in structure and behaviour as a result of convergent evolution: both are long-legged as an adaptation to their terrestrial lifestyle, they both hop in a similar fashion, and they both have large eyes to compensate for the darkness of the deep forest undergrowth they inhabit. In common with the pittas, antpittas are usually great skulkers, devilishly elusive unless drawn into view by voice-playback. Likewise they are regarded as almost mythical by birdwatchers. Fortunately, they sometimes hop about openly on paths for prolonged periods, particularly when light levels are low, for instance at dawn and dusk, or during drizzle or fog.

[*Grallaria squamigera*  
*squamigera*,  
 Paschoa Forest Reserve,  
 Ecuador.  
 Photo: Kevin Schafer]





The **Chestnut-naped Antpitta** exemplifies the radiation of *Grallaria* antpittas that are relatively small-bodied, unbarred and richly patterned. The signal function of these patterns, if any, is unknown. Like most antpittas, it has a short stubby bill that is prominently curved from the base, at which point it is almost as broad as it is deep. The genus *Grallaria* is almost entirely restricted to the Andes; this species frequents high cloudforests, usually with a strong component of bamboo.

[*Grallaria nuchalis nuchalis*, Cordillera Sabanilla, Zamora-Chinchipe, Ecuador.  
Photo: Doug Wechsler/VIREO]

nevertheless emerged. Two well-supported and strongly resolved clades were recognized, one of them containing the large species, represented by the Undulated Antpitta (*Grallaria squamigera*), the Giant Antpitta (*Grallaria gigantea*) and the Variegated Antpitta, as well as the Plain-backed (*Grallaria haplnota*) and the Scaled Antpittas. The second clade contained all 13 of the other species included in the studies. These other forms had been referred to the subgenera *Thamnocharis*, *Hypsibemon* and *Oropezus*, but these taxa were shown to cause paraphyly unless additional subgenera were erected. The Rufous Antpitta and its sister-species the Chestnut Antpitta form one branch, the Elusive Antpitta and its sister-species the Ochre-striped Antpitta (*Grallaria dignissima*) a second branch, the Stripe-headed Antpitta (*Grallaria andicolus*) a third branch, and the rest of the species a fourth branch. As had been suspected, it was found that the Chestnut-crowned (*Grallaria ruficapilla*) and Watkins's Antpittas (*Grallaria watkinsi*) appear to be close relatives, whereas the finding that the Jocotoco Antpitta was apparently close to the Chestnut-naped Antpitta (*Grallaria nuchalis*) was more of a surprise.

Possible relationships of some species not included in these studies had already been suggested. For example, five allopatric forms, the Yellow-breasted (*Grallaria flavotincta*), White-bellied (*Grallaria hypoleuca*), Rusty-tinged (*Grallaria przewalskii*), Bay (*Grallaria capitalis*) and Red-and-white Antpittas (*Grallaria erythroleuca*), had been united in a superspecies. The Pale-billed Antpitta was considered a close relative of the Chestnut-naped Antpitta, although it may be even closer to the Jocotoco Antpitta, and the Cundinamarca Antpitta was believed by its describer, in 1992, to be a sister-species of the Santa Marta Antpitta (*Grallaria bangsi*). The relationships of several species remain unknown. Furthermore, the taxon *saltuensis*, currently ranked as one of seven subspecies of the Rufous Antpitta, may not even be closely related to that species; it is possible that *saltuensis* is closer to the Tawny Antpitta, or is even a separate species altogether.

Sibling species have caused confusion in other formicariid genera, particularly in *Hylopezus* and *Chamaeza*. In these two genera, plumage differences appear to play an even less important role in species recognition than is the case with other ground-antbirds. Three subspecies, or groups of subspecies, in the genus

*Hylopezus* have recently been given full specific rank, raising the number of species in the genus from five to eight. The three taxa left in the Spotted Antpitta (*Hylopezus macularius*), following the separation from that species of the Masked Antpitta (*Hylopezus auricularis*), appear to differ distinctly in their vocalizations, suggesting that they, too, should perhaps be treated as full species.

Until recently, the Cryptic Anthrush (*Chamaeza meruloides*) had been confused with the very similar Rufous-tailed Anthrush (*Chamaeza ruficauda*), with which it is partly sympatric in south-eastern Brazil, with the result that *meruloides* was generally not even recognized as a distinct taxon. Moreover, Schwartz's Anthrush (*Chamaeza turdina*) of Venezuela and Colombia, the



Perhaps the most strikingly marked ground-antbird is the **Black-crowned Antpitta**. It belongs in *Pittasoma*, a genus that contains two species quite unlike other members of the family in terms of their longer, straighter bills, and different sternal structure and colour pattern. Along with a few *Grallaria*, they are the only formicariids to exhibit sexual dimorphism. In fact, DNA sequencing suggests that *Pittasoma* may not belong in the Formicariidae at all, but instead with the gnateaters, in *Conopophagidae*.

[*Pittasoma michleri zeledoni*, Braulio Carrillo National Park, Costa Rica.  
Photo: Kevin J. Zimmer]





vocalizations of which are extraordinarily like those of the Cryptic Anthrush, was also considered a subspecies of the Rufous-tailed Anthrush, despite the massive geographical gap between the two. Similarly, the subspecies of the Short-tailed Anthrush (*Chamaeza campanisona*), no fewer than twelve of which have been described, inhabit four distinct regions; these forms may, upon closer examination, be found to represent more than one species.

A number of polytypic formicariids could, on the basis of vocal differences, prove to encompass more than one species. These include the Striated Anthrush (*Chamaeza nobilis*), the Slate-crowned (*Grallaricula nana*) and Rusty-breasted Antpittas

(*Grallaricula ferrugineipectus*), and the Thrush-like Antpitta (*Myrmothera campanisona*), as well as five *Grallaria* species, these being the Tawny, Giant, Variegated, Chestnut-naped and Rufous Antpittas. The same could apply also to the Red-and-white Antpitta, which is presently treated as a monotypic species. In all cases, however, more study is needed.

Research on the molecular systematics of ground-antbirds is currently being carried out by at least two independent teams of scientists. It is likely, therefore, that the genetic relationships of several more taxa will be clarified in the near future.

### Morphological Aspects

On account of their large head, big eyes, long legs and stubby tail the ground-antbirds appear quite out of proportion. Only the *Chamaeza* anthrushes have eyes and head of a more normal size for a bird, as well as a stance that is not quite so upright as that of the other formicariids, but they still exhibit a short tail.

As is evident from their broadly rounded wings and the lack of a keel on the sternum, the ground-antbirds are poor fliers. Indeed, most members of the family are nearly flightless. Only the *Formicarius* species are capable of strong flight, although they only rarely use their wings except when leaving the nest, or when hard pressed by a pursuer.

The Thamnophilidae are referred to as typical antbirds, or "true" antbirds, because many of that family's species follow swarms of army ants. The ground-antbirds, on the other hand, rarely do this, and they bear the name of "antbird" only because they were formerly placed in the same family as the typical antbirds (see Systematics). The five genera of antpittas owe their vernacular name to a similarity in shape with the pittas (Pittidae) of the Old World, but, in stark contrast to the brilliant colours of the latter, antpittas and other ground-antbirds have a dull plumage. The anthrushes, which constitute the genera *Formicarius* and *Chamaeza*, have presumably acquired their English name primarily as a result of their size and their habit of foraging on the ground, as they appear quite unlike a thrush (Turdidae) in most aspects.

Apart from *Pittasoma* and some species of *Grallaricula*, ground-antbirds exhibit no sexual dimorphism. Females tend to be a trifle smaller than the males of the same species, but in the

**The Streak-chested Antpitta** is placed in *Hylopezus*, a genus that occupies a size niche intermediate between *Grallaricula* and *Grallaria*. As in both of these groups, the legs and feet of *Hylopezus* are large, as a result of their terrestrial lifestyle, but, in contrast to those other genera, their legs are conspicuously pink. Other common features of the genus are well-speckled chests and varying amounts of pale feathering around the eyes or lores. Most *Hylopezus* seem to prefer disturbed and secondary habitats, such as overgrown clearings and tree-fall gaps.

[*Hylopezus perspicillatus lizanoi*, Carara Biological Reserve, Costa Rica. Photo: Kevin J. Zimmer]



In shape, *Chamaeza* anthrushes are quite similar to *Formicarius* anthrushes, but they are patterned very differently. Their plumage bears strong arrow-marks or bars on the underparts, their bills are shorter, and their legs paler and pinker. Their songs are amongst the most hauntingly beautiful sounds of Neotropical forests: long patiently rising trills, sometimes ending abruptly with a few descending chuckling notes. The **Barred Anthrush** is a serious bird: it is one of the *Chamaeza* anthrushes that never chuckle at the end of their songs!

[*Chamaeza mollissima mollissima*, Munchique, Cauca, Colombia. Photo: J. S. Dunning/VIREO]



Within its extensive range from Venezuela to northern Peru, the **Chestnut-crowned Antpitta** is usually the commonest of Andean antpittas, or at least the most frequently encountered. This can be explained, in part, because it usually favours scrappy habitat or the edges of man-made clearings. Like most species in the family it spends nearly all its time on the ground, generally flying only when alarmed. On occasion, however, antpittas do ascend into low branches to sing, and indeed some species regularly perch up to 10 m above the ground.

[*Grallaria ruficapilla*,  
Venezuela.

Photo: Robin Chittenden]



case of *Formicarius*, and possibly also *Chamaeza*, the reverse may hold true. Rather little has been documented on non-adult plumages, but the following general statements can be made. The juvenile plumage of both *Chamaeza* and *Formicarius* is fairly firm and is coloured much like that of the adult. In contrast, juveniles of *Grallaricula* and *Grallaria* have very fluffy plumage, nearly uniform pinkish in *Grallaricula*, and barred, spotted or streaked with dark and buff in *Grallaria*. The juvenile plumage is apparently retained for a period ranging from a few days to a few weeks after fledging. The following plumage, the first basic plumage, is kept for several months and is mostly like that of an adult. In the case of *Grallaria*, however, it usually includes scattered feathers which, except for their more integrated texture, resemble those of the juvenile.

As already mentioned, the adult plumage of all ground-antbirds is dull in colour. Evidently, camouflage is so important to these predominantly terrestrial birds that vocalizations have largely taken over the role of plumage patterns in signalling functions (see Voice, General Habits). An interesting exception is provided by the *Formicarius* species, which apparently use the underwing as a signal during momentary wing-lifting; the underwing of these species shows a broad pale cinnamon bar across the base of the remiges, or, as in the case of the Rufous-fronted Antthrush (*Formicarius rufifrons*), is entirely bright cinnamon.

The bill of the *Grallaria* antpittas is heavy and is prominently curved from the base, where it is almost as deep as it is wide. On some of these species it is unusually massive. Other genera have a straighter bill, which is fairly strong in *Formicarius*, *Hylopezus* and *Myrmothera*, and weaker in *Chamaeza* and *Grallaricula*. Rictal bristles are present in most genera. In *Grallaricula* they are sometimes nearly as long as the bill, whereas in *Formicarius*, *Chamaeza* and *Pittasoma* they are greatly reduced; rictal bristles are absent in the genera *Hylopezus* and *Myrmothera*.

The metasternum varies considerably within the family. In *Pittasoma*, *Myrmothera* and *Hylopezus*, the posterior margin usually has four notches and is thus of "type 6", as in the tapaculos, whereas in *Grallaricula* it has two notches and two windows and is therefore of "type 5", as in the gnateaters. In contrast, the sternum of the *Grallaria*, *Chamaeza* and *Formicarius* species is of "type 3", having two notches, as is the case for most other suboscines. Although probably of some taxonomic value, these states are subject to variation. When large samples are examined, a few individuals are usually found to exhibit a different,

though closely related state. For example, of 14 Black-faced Antthrushes (*Formicarius analis*), one had a "type 4" sternum with two notches and some small perforations, and one of five Streak-chested Antpittas (*Hylopezus perspicillatus*) had a "type 5" sternum. Some species of *Hylopezus* and *Grallaria* have a curved humerus like that of the gnateaters, approaching the condition found in tapaculos, in which the humerus is more strongly curved.

In similarity with the Conopophagidae and the rhinocryptid genus *Teledromas*, the ground-antbirds have a syrinx with three extrinsic pairs of muscles and no intrinsic ones. The sternotracheal extrinsic muscle is simple, whereas it is bifur-

**The Ochre-breasted Antpitta** is a fairly common but elusive inhabitant of Andean cloudforest. It is so inconspicuous that it is possible to spend weeks in such a forest without seeing one, until its habits and vocalizations are learned. Although these tiny birds are generally much less terrestrial than the larger antpittas and antthrushes, they still tend to perch on branches within 2 m of the ground.

As can be seen in this photograph, their rictal bristles are almost as long as the bill, and thus the longest in the family.

[*Grallaricula flavirostris mindoensis*,  
Chical, Carchi, Ecuador.  
Photo: Doug Wechsler/  
VIREO]







The vast majority of ground-antbirds inhabit deep forest, where they skulk about in more or less dense undergrowth.

The **Black-faced Antthrush** (above) is restricted to the leaf litter of lowland humid forest, often preferring moist or swampy places. Many other ground-antbirds prefer montane forests, where they thrive in tangled bamboo thickets and stunted forest on steep slopes.

In mountainous regions they are particularly prone to speciation because of the patchiness of habitat and their low dispersal ability – they stick to cover and rarely cross the gaps between forests.

The **Tawny Antpitta** lives at the highest altitudes of all, its range extending right up to the small copses and patches of bushes out in páramo at 4500 m. This is the least secretive member of the family, often flaunting itself noisily away from cover for protracted periods.

[Above: *Formicarius analis saturatus*, Henri Pittier National Park, Aragua, Venezuela. Photo: Andy Swash



Below: *Grallaria quitensis quitensis*, Cayambe-Coca Ecological Reserve, Ecuador. Photo: Kevin Schafer]



cate in the typical antbirds, and the processus vocalis is well developed. Again, these characters are the same as are found in the Conopophagidae and the Rhinocryptidae, but unlike those of the Thamnophilidae.

Ground-antbirds have long legs and large feet, evidence of a terrestrial existence. The tarsal scutellation of most formicariids is holaspidean, with one row of scutes on the posterior edge of the tarsus. In the two *Pittasoma* species, however, it is exaspidean, whereby acrotarsal scutes envelop the entire outside of the tarsus and there is no posterior row of scutes. Taxaspidean scutellation, with two rows of scutes on the posterior edge of the tarsus, is found in the genera *Formicarius* and *Chamaeza*, as well as in three species of *Grallaria*, the Chestnut-naped, Undulated and Giant Antpittas. Fused or nearly fused tarsal scutes are a feature of *Hylopezus* and *Myrmothera*, and also of the Ochre-breasted Antpitta (*Grallaricula flavivestris*) and some *Grallaria* species, such as the Scaled Antpitta and the Moustached Antpitta (*Grallaria alleni*).

Like all suboscine birds, the Formicariidae possess ten primaries. The number of rectrices is usually ten or twelve, varying even between closely related forms, but the Elusive Antpitta is an exception, as it has only eight tail feathers. Another *Grallaria* species, the Scaled Antpitta, which normally has twelve rectrices, occasionally has 14.

### Habitat

The vast majority of ground-antbirds inhabit humid forest. Indeed, some, such as the Ochre-fronted (*Grallaricula ochraceifrons*) and the Peruvian Antpittas (*Grallaricula peruviana*), the Black-crowned (*Pittasoma michleri*) and the Rufous-crowned Antpittas (*Pittasoma rufopileatum*), and the Yellow-breasted, White-bellied, Rusty-tinged, Plain-backed, Moustached and Giant Antpittas, are found only in wet forest. The same is true of the Barred Antthrush (*Chamaeza mollissima*), Schwartz's Antthrush and the Rufous-breasted Antthrush (*Formicarius rufipectus*). Only Watkins's Antpitta is confined to dry forest and scrub. The White-browed Antpitta (*Hylopezus ochroleucus*) and its relative the Speckle-breasted Antpitta (*Hylopezus nattereri*), as well as the Short-tailed Antthrush and the White-throated Antpitta (*Grallaria albigula*), occur in both humid and deciduous forest.

While the Stripe-headed Antpitta is typical of high-elevation *Polylepis* woodland and the Tawny Antpitta of elfin forest and humid tree-line shrubbery, both persist also in very small patches of scrub in the páramo and puna grasslands, the last remnants of a once widespread páramo-puna shrub zone. Among the other *Grallaria* species, the Chestnut-naped and the Pale-billed Antpittas, and, to a lesser degree, the Jocotoco, Rufous, Chestnut and Red-and-white Antpittas, favour stands of bamboo. This is a habitat frequented also by the Slate-crowned Antpitta and by some populations of the Rusty-breasted Antpitta.

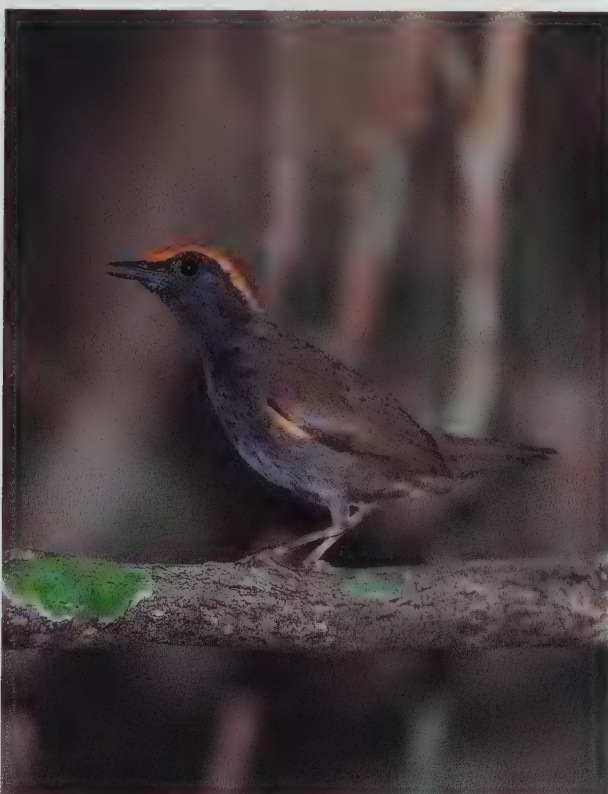
Finally, two species of *Formicarius*, the Black-faced and the Rufous-fronted Antthrushes, are found on swampy ground. The latter species, in fact, exhibits a distinct preference for such habitat types.

Some species tolerate considerable disturbance of their habitat. These include at least five species of *Grallaria*, namely the Bicoloured (*Grallaria rufocinerea*), Brown-banded (*Grallaria milleri*), Chestnut-crowned, Rufous-faced (*Grallaria erythrotis*) and Scaled Antpittas. Moreover, the members of the genus *Hylopezus* seem generally to prefer disturbed habitats.

Within their habitats, nearly all ground-antbirds forage on the ground. Many perch within a few metres of the ground when alarmed or singing, and some, such as the Scaled and Variegated Antpittas, often sing from perches as high as 10 m up. Members of the genus *Grallaricula* are primarily arboreal, but nevertheless remain within 2 m of the forest floor.

### General Habits

Although frequently heard, ground-antbirds are very difficult to observe. Most members of the family not only inhabit dense and dark undergrowth of impenetrable vegetation on often steeply sloping ground, but also are very secretive, and have the habit of remaining in a "frozen" posture for lengthy periods. Bouts of observation are often restricted to a few seconds, before the bird flees or disappears out of view. Only the few species inhabiting level ground in lowland rainforest, such as the Black-faced Antthrush, can regularly be observed for longer periods of time, but it is occasionally possible to watch a *Grallaria* antpitta for up to 20 minutes while it forages in a clearing at dawn or dusk, or during rainy and foggy weather.



This **Rufous-capped Antthrush** and **White-browed Antpitta** are

singing, the latter while rocking slowly from side to side. As their habitat is dense, communication between ground-antbirds is primarily vocal. Their songs tend to be loud and relatively deep - often 2 KHz or lower, possibly because low frequencies travel best in the understorey. Antthrushes and antpittas regularly hop onto low perches to sing, the former tending to stretch their heads forward, the latter tilting their heads back.

[Left: *Formicarius colma* ruficeps, Linhares Natural Reserve, Espírito Santo, Brazil.

Right: *Hylopezus ochroleucus*, Araçuaí, Minas Gerais, Brazil.  
Photos: Edson Endrigo.]





The **Rufous-capped Anthrush**, in common with other members of the anthrush lineage, spends most of its time walking on the ground. It tends to hold its body horizontally and frequently cocks its tail or jerks its head forward as it takes a measured step. On account of this stepping action it has been likened to tiny rails or miniature bantam hens. Most anthrushes are known to flip leaves occasionally as they progress, and many, especially those in the genus *Chamaeza*, are in the habit of hopping up onto fallen logs.

[*Formicarius colma amazonicus*, Imperatriz, Maranhão. Photo: Haroldo Palo]

On exceptional occasions, good fortune may provide the opportunity for closer study. E. Schäfer, writing in 2002, reported the finding of communal roosts during the non-breeding season in Venezuela (see also Movements). In one instance, a total of ten individuals of the Black-faced and Short-tailed Anthrushes assembled together within a space of only 2 cubic metres in a *Miconia* bush, and once no fewer than 20 of the latter species gathered in a single bush.

Members of the two anthrush genera walk deliberately while holding the body horizontally and cocking or pumping the tail, producing an appearance somewhat like that of a rail (Rallidae). The *Formicarius* species forage mostly in leaf litter on the forest floor, whereas the *Chamaeza* anthrushes also walk on roots and logs, taking prey from the ground, from debris and from low seedlings. In contrast, four of the five genera of antpittas have an upright stance and cock the tail only momentarily, usually in conjunction with bobbing and wing-flicking. They often hop or patter, rather than walk, and frequently come to a halt in a freezing stance, with the head tilted slightly sideways, looking at or listening towards the ground. The genus *Grallaricula* is the exception. Although its members resemble a miniature *Grallaria* antpitta in shape, they are arboreal and often cling sideways on to mossy trunks and lianas, occasionally dropping to the ground for brief moments.

Most, or probably all, of the antpittas make bobbing movements and flick their wings. Between bouts of song, *Hylopezus* and, apparently, some species of *Grallaricula* have a curious habit of rocking the body from side to side without moving the head. Members of those two genera, as well as of *Myrmothera* and *Grallaria*, often stop to fluff the feathers. The *Hylopezus* and *Grallaria* antpittas frequently preen, mainly, it seems, as a displacement activity, but perhaps also because they often carry many feather lice.

The majority of territorial disputes may be settled vocally, but direct fighting has been seen between two individuals of the Rufous Antpitta. The observer described the way in which the two combatants "came rolling down the slope as a ball". In addition, sounds heard from two Barred Anthrushes left little doubt that the birds were engaged in physical combat, even though the fight itself could not be seen. It may also be significant that members of a formicariid pair, although probably remaining in vocal contact, rarely forage close together. The fact that a male Rufous-faced Antpitta kept in New York Zoo, in the USA, killed its female partner could perhaps be interpreted as further evidence that these are rather aggressive birds.

Interspecific aggression presumably plays a role in the altitudinal displacements that are evident among a number of ground-antbirds. These are most pronounced in the cases of the Short-tailed and Schwartz's Anthrushes, the Short-tailed and

The ground-antbirds are solitary and independent hunters, rarely found in pairs or accompanying antswarms, and never joining mixed-species flocks. Their diet is almost entirely composed of invertebrate prey which they pick from the forest floor, sometimes after flicking leaves aside or rooting around in the leaf litter. The main targets are caterpillars and grubs, such as that held in the bill of this **Streak-chested Antpitta**. Less commonly, some species are known to eat fruit, and the larger species occasionally catch small snakes and frogs.

[*Hylopezus perspicillatus lizanoi*, Carara Biological Reserve, Costa Rica. Photo: César Sánchez]





Because the ground-antbirds are so unobtrusive, their nests have rarely been found and their breeding biology is very poorly known.

Of the two species in the genus *Myrmothera*, the only available breeding information comes from the Thrush-like Antpitta.

This species is typical of the antpitta lineage in that it builds a simple open cup of tiny twigs, fibres and leaves, usually placing it near the ground, amongst low vegetation or upon the rosette of an undergrowth plant, often a fern, a palm, or a large herbaceous clump.

[*Myrmothera campanisona*  
*campanisona*,  
St Elie, French Guiana.  
Photo: Olivier Tostain]



Cryptic Antthrushes, the Rufous-breasted, Black-headed (*Formicarius nigricapillus*) and Black-faced Antthrushes, the Plain-backed and Yellow-breasted Antpittas, the Chestnut and Rufous Antpittas, the Scaled and Moustached Antpittas, and the Slate-crowned and Crescent-faced Antpittas (*Grallaria lineifrons*). In some areas, similar altitudinal displacement is demonstrated by the Black-faced and Rufous-capped Antthrushes (*Formicarius colma*), which are sympatric through much of lowland Amazonia. In Manu National Park, in south-eastern Peru, the Black-faced Antthrush, weighing 58 g, not only is behaviourally dominant over the smaller Rufous-capped Antthrush, which weighs 49 g, but also is much more common and has smaller territories than the latter. It was suggested that the co-existence of these species is possible because the large territories of the Rufous-capped Antthrush allow it to avoid coming into contact with the dominant species, even though the territories of the two sometimes overlap. This was supported by playback experiments, which showed that the song of the Rufous-capped Antthrush elicited aggressive behaviour from its congener, while Black-faced Antthrush song caused the smaller species to move away. On the other hand, no evidence of competition between the two was found in a study area near Manaus, in northern Brazil. Here, however, the size difference is greater, the Rufous-capped Antthrush averaging 46 g in weight and the Black-faced Antthrush 62 g, while the former is the commoner of the two and has the smaller territories; furthermore, playback experiments produced no evidence of interspecific aggression between them. It is clear that the factors determining the distributions of these two antpittas are not fully understood.

### Voice

The voices of ground-antbirds are particularly characteristic. Their exotic, ventriloquial, loud, and often easily imitated whistled songs are so low-pitched that they travel along the ground for considerable distances. As with other suboscines, the song of the individual species is stereotyped and does not vary much from one part of the range to another, at least within the same subspecies.

The songs of the Formicariidae do vary considerably, however, both between and within genera. The simplest song is that

of the Bicoloured Antpitta, which delivers a single long whistle. The two *Pittasoma* species also utter a single whistle, repeated at intervals of 1-2 seconds for a minute or more, seemingly without a fixed length. The Jocotoco Antpitta likewise repeats a single note at steady pace, but usually as a phrase of six to eight notes.

Some members of the family have songs composed of only two notes. These notes may be alike, as in the case of the Rufous-breasted Antthrush, or they may be different, as with the Santa Marta, White-throated, Ochre-striped and Elusive Antpittas. Several other ground-antbirds have songs of three notes. In those of the Tawny, Rufous-faced, Red-and-white, Rusty-tinged, White-bellied and Yellow-breasted Antpittas, two of the notes are alike or nearly alike; in the Black-faced Antthrush and the Brown-banded, Cundinamarca and Chestnut-crowned Antpittas, however, all three notes are different. Other ground-antbirds have more complicated songs composed of from four to over 100 notes. The Undulated and Giant Antpittas, and presumably also the Great Antpitta (*Grallaria excelsa*), give very deep rolling series, 4-6 seconds long, of 60-100 notes which increase in volume and somewhat in pitch during the beginning of the phrase. The Variegated, Scaled, Moustached, Grey-naped and Plain-backed Antpittas deliver similar but shorter series which, except in the case of the last of those species, slow distinctly in pace to accentuate a few notes before the somewhat weaker end. The longest *Grallaria* song is that of the Stripe-headed Antpitta, lasting 7-13 seconds; it is a steadily rising series of 30-45 wheezy and fairly weak and high-pitched notes, quite unlike other *Grallaria* songs.

The *Myrmothera* antpittas sound very like the Plain-backed Antpitta. In most forms of the Thrush-like Antpitta, however, the song is composed of five to seven notes, instead of four or five, while that of its sole congener, the Tepui Antpitta (*Myrmothera simplex*), consists of ten or eleven notes.

Most species of *Chamaeza* deliver a song 10-20 seconds in length and consisting of 15-200 notes of similar quality, but increasing gradually in volume and pitch, sometimes levelling over the last half or third of the song. The Short-tailed and Striated Antthrushes terminate this vocalization with a descending series of low "whoop" notes. The song of the Rufous-tailed Antthrush is similar, but lacks the "whoop" notes and is much faster and shorter, with 40-60 notes delivered in only 3-4 seconds.





Although unrelated, the true pittas (Pittidae) of the Old World have similar lifestyles to antpittas differing most conspicuously by the fact that they are so colourful as to be almost gaudy. As such their nests are usually dome-shaped structures that provide concealment.

The antpittas, however, rely on camouflage. They are dressed in sombre attire, allowing them to incubate tightly on open nests where they are almost impossible to see unless flushed. Ground-antbirds lay two eggs, rarely three, these being more or less rounded and quite variable in colour. In *Grallaria* they are either pale greenish, white or light brown, marked or speckled darker at the wider end; in *anthruses* they are white, at least before they become sullied with dirt; in *Myrmothera* they are generally pale blue with dark marks at the broad end. The **Variegated Antpitta** is typical of the genus *Grallaria* in having blue eggs, as can be seen here. In this species, the female incubates the eggs for 17 days, unassisted by her mate.

[*Grallaria varia imperator*, Cotia, São Paulo, Brazil. Photos: Dante Buzzetti]



Like most nestlings reported in the family, those of the **Scaled Antpitta** are dark-skinned and clothed in dark downy plumage. When they beg for food, however, their bright gape stands out conspicuously as a stimulus and target for their visiting parents. As is the case for other passerine birds, it is likely that the brighter or redder their mouths, the more likely nestlings are to be fed, a situation that drives the evolution of conspicuous gapes.

[*Grallaria guatemalensis princeps*,  
San Isidro, Costa Rica.  
Photo: Marco Saborio]



Although relatively little is known about the voices of *Grallaricula* species, the known songs are on average higher-pitched than those of *Grallaria*, but are remarkably loud for the size of the birds. The Slate-crowned and Rusty-breasted Antpittas have very distinct songs, whereas the Ochre-breasted and Crescent-faced Antpittas utter a fairly similar, steadily paced series of notes that increases in volume and pitch and then levels out.

Song varies considerably from one species to another in the genera *Formicarius* and *Hylopezus*. In fact, only the songs of the White-lored Antpitta (*Hylopezus fulviventeris*) and the Amazonian Antpitta (*Hylopezus berlepschi*) bear any resemblance to one another.

The most complex song in the family is that of the Rufous Antpitta, a species which differs further in having a larger vocal repertoire than that of other ground-antbirds. There seems to be a rather considerable geographical variation in the song. That of the nominate subspecies is about 5.5-7 seconds long and consists of an introductory note followed by a descending, accelerating series of about 30 notes, and terminating in up to six progressively shorter bursts, each burst being of a loud note followed by two to six accelerating notes. The song of the subspecies *spatiator*, confined to the Santa Marta Mountains of north Colombia, is noticeably shorter, a 3-second trill containing about 30 notes given at an even rate of 9.5-10 per second, the frequency dropping gradually from 4.5-4.8 kHz to 3.2-3.4 kHz. Subspecies of the Rufous Antpitta in the south of the range, in south Peru and Bolivia, utter a trill which drops slightly before rising again at the end.

In addition to the song, ground-antbirds emit various calls, usually simpler than the songs. Some species, among them the Tawny, Chestnut-crowned and Rufous Antpittas, frequently utter calls with a territorial function, these being sometimes described as "alternate" or "short" song. The *Chamaeza* antthrushes call quite frequently, and it is interesting that the interspecific variation in these calls is much less than is that of song. Several species call only on rare occasions.

Song is usually delivered at dawn and dusk, but in the Andes it can also be heard at other times of the day during rainy or foggy weather. A few species, however, notably the Tawny and Chestnut-crowned Antpittas and the Black-faced Antthrush, will sing throughout the heat of the day. Most Amazonian ground-antbirds

vocalize almost daily during clear weather throughout the year, but the Striated Antthrush may be silent for up to several weeks at a time. Some Andean formicariids are highly seasonal in their singing behaviour, examples being the Chestnut-naped, Jocotoco, Red-and-white, Giant and Undulated Antpittas in the genus *Grallaria* and the Crescent-faced Antpitta in the genus *Grallaricula*. In contrast, others, such as the Chestnut-crowned, Tawny and Rufous Antpittas, sing in all months of the year.

Antpittas fluff out the feathers of the throat and often throw back the head when singing. Although most species feed on the ground (see Food and Feeding), song is, with the exception of *Formicarius* and *Chamaeza*, delivered most often from a perch. The majority of species sing from within a few metres of the ground, but three *Grallaria* species, the Scaled, Variegated and Giant Antpittas, sing from more elevated perches, sometimes as high as 10 m above the ground. The songs of antpittas are so ventriloquial that one can spend a long time searching for the bird in the undergrowth before realizing that it is singing from high above. Moreover, the Streak-chested Antpitta will sing from the nest for long periods, relying entirely on its camouflaged plumage and the ventriloquial quality of its song.

In most species it is the males that sing, but there are several in which both sexes appear to do so. The females of at least three *Formicarius* species, the Black-headed, Rufous-breasted and Black-faced Antthrushes, as well as those the Barred Antthrush and the Rufous Antpitta, evidently deliver a similar song to that of their respective males. In addition, the Bicoloured Antpitta and also, apparently, its congeners the Chestnut-naped and Scaled Antpittas sometimes sing duets in which the male and female songs are different.

### Food and Feeding

Ground-antbirds usually feed alone, although members of a pair are often found within earshot of each other. In general, they do not follow mixed-species flocks, but *Formicarius*, *Chamaeza*, *Pittasoma*, *Hylopezus* and, perhaps, *Myrmothera* species will at times feed on the fringes of swarms of army ants.





In the **Streak-chested Antpitta** both sexes incubate, with the female apparently always taking the overnight shifts. The chicks are born naked, with dark down feathering developing shortly afterwards. Their darkness presumably helps to keep them hidden from predators when they are left unattended in open nests. In the forests of South and Central America levels of nest predation are extremely high and camouflage is therefore of paramount importance.

[*Hylopezus perspicillatus lizanoi*,  
Carara Biological  
Reserve, Costa Rica.  
Photos: César Sánchez]

Most members of the family forage on the ground, well concealed by the undergrowth. Only at dawn and dusk, and during foggy or rainy weather, do they sometimes venture into clearings or fields, although never moving far from cover.

*Formicarius* and *Chamaeza* antthrushes walk slowly and deliberately, from time to time flipping leaves as they advance. Antpittas jump or patter quickly to snatch prey from the ground, or halt suddenly with the head tilted slightly sideways, either looking or listening towards the ground, and then bob the body and flick the wings and tail a few times before hopping on. It is possible that the bobbing and flicking movements may aid in flushing prey, but these actions are widely used as a displacement activity when the birds are disturbed. The Brown-banded Antpitta has been observed to shake leaves, and leaf-flipping has also been reported for the Streak-chested Antpitta.

Antpittas of the genus *Grallaria* mostly glean insects from mossy trunks and lianas while hovering or briefly clinging to the moss in an awkward sideways posture. Only occasionally do they drop to pick prey from the ground or to make a few jumps and sudden halts, bobbing and flicking the wings and tail in typical antpitta fashion.

The food taken by formicariids includes a wide variety of invertebrate prey. In addition, and perhaps somewhat surprisingly, vertebrate bones, presumably from frogs, have been found in the stomachs of some larger species, and the *Formicarius* antthrushes are known sometimes to eat small snakes. Fruits are occasionally eaten by the latter group, as well as by the Peruvian and Pale-billed Antpittas. Furthermore, for species inhabiting high-elevation woodland and scrub, it is possible that fruits may be an important element during snowy conditions, although there is no direct evidence that this is so. Nevertheless, plant matter has been found occasionally in the stomachs of both the Stripe-headed Antpitta and the Tawny Antpitta, two species inhabiting low vegetation at up to 4000 m or more in the Andes. The Giant Antpitta feeds on giant earthworms (*Rhynodrylus*), which it quickly cuts into small pieces with the aid of its massive beak and then swallows, but this species also includes huge grubs and large beetles in its diet.

The Tawny Antpitta has been observed to regurgitate what was revealed, upon examination, to be a perfectly globular 1-cm ball of sclerotized arthropod parts. The same has been reported for the very distantly related Black-faced Antthrush, and this type of behaviour could be of more general occurrence among the ground-antbirds.

## Breeding

As may be expected for such a secretive family, the breeding habits of the Formicariidae are very poorly known.

Relatively few nests of this family have been found. All of them were no more than a very simple, shallow cup consisting of a thin lining of roots, petioles, vegetable fibre and a few leaves, placed upon dead leaves or moss. The *Formicarius* antthrushes place their nest in a cavity. Interestingly, the Streak-chested Antpitta will occasionally use the abandoned nest of another species, a habit which has not been confirmed for any other member of the family.

From the few data available, the normal clutch size appears to be of two eggs. Formicariid eggs are rather large, and vary in shape according to genus. The eggs of *Chamaeza* are reportedly almost spherical. Those of *Grallaria*, *Grallaria* and *Hylopezus* are fairly rounded in shape, while *Formicarius* eggs are ovoid. The colour also varies, even within genera. The eggs of *Pittasoma* are pinkish-buff, the large end blotched with dark brown which forms a cap, and the rest of the surface dotted with grey and purple. *Grallaria* species lay eggs which are pale greenish, white or light brown, and are marked with shades of brown at the large end, while the light grey to pale olive-buff or yellow-brown eggs of *Hylopezus* are coarsely mottled with dark at the large end. Those of *Myrmothera* are blue-green to turquoise-blue and have dark brown marks around the larger end. In contrast, *Grallaria* eggs are of a uniform blue-green or blue; a clutch of three buffy eggs with rufous blotches was ascribed to the Chestnut-crowned Antpitta, but this was presumably an error, or the blotches were perhaps caused by dirt, as once reported for the congeneric Variegated Antpitta.





Among its congeners, the **Scaled Antpitta** has received the most study, and its nesting behaviour is thus slightly better known. Its nest is a bulky cup or platform of large rotting dead leaves, vines, sticks and moss, which is lined with fine rootlets and usually placed low down against an upright trunk, less often in dense growth on a stump, log or tree fork. On occasions, the abandoned nest of another bird is apparently adapted and used by this species. The nestling period has been estimated at 17-19 days, during which time both parents contribute to the provisioning of young.

[*Grallaria guatemalensis princeps*,  
Costa Rica.  
Photo: Michael & Patricia  
Fogden]





In stark contrast to antpittas, the nests of anthruses are always placed in cavities. Favoured sites are usually 1-3 m above the ground in holes found in slender trunks, sometimes the old nests of trogons (Trogonidae); alternatively, they may be in the tops of tree stumps or palm stumps, where these have snapped and rotted out leaving a hollow chamber to develop. Occasionally, holes in banks are used. This **Short-tailed Anthrush** is visiting its nest cavity to feed its young. During the first days after hatching, adult anthruses carefully clean the nest cavity, apparently consuming the droppings produced by their offspring. When the nestling stage nears completion, however, older chicks climb to the nest entrance to be fed, after which time the parents no longer descend into the cavity and interior hygiene is ignored. The first stages of nestling growth in *Chamaeza anthrus* have never been described, presumably because their nests are difficult to find, and, once found, difficult to peer into; they are usually deep and dark. The usual nestling period, at least in one species of anthrush, lasts between 18 and 20 days.

[*Chamaeza campanisona*  
*campanisona*,  
 Alagoas, Brazil.  
 Photos: Anita Studer]





Almost nothing is known about fledging and nest defence in antpittas. It does appear, however, that nestlings abandon the nest a few days before they can actually fly, as might be guessed by their terrestrial lifestyle. In at least one species, the approach of a predator (or human observer) causes nestlings to feign death, and adults to hop awkwardly, as if lame, and spread their wings on the ground in a classic distraction display. It seems quite possible that these plays may be more widespread among members of the ground-antbird family, such as this

**Thrush-like Antpitta.**

[*Myrmothera campanisona*  
*campanisona*,  
Nouragues Nature  
Reserve, French Guiana.  
Photo: Olivier Tostain]

The two genera of antthrushes lay white eggs, those of *Formicarius* soon becoming stained and blotched. The eggs of the Black-faced Antthrush, for example, quickly acquire speckles and stains from brown mud, these marks sometimes covering the whole egg even when it is fresh. In some cases, however, it is possible that the eggs of this species do not become sullied in this way, but remain white. The eggs of the Short-tailed Antthrush, while normally white, can rarely be greenish-white, and are more glossy than *Formicarius* eggs.

Very little information is available on the appearance of the chicks. From what has been discovered, however, the following general statements can be made. The chicks are dark-skinned, matching the dark interior of the nest. Those of most species are born naked, but hatchlings of *Formicarius* antthrushes are covered in long, spreading, grey down; the hatchlings of *Chamaeza* antthrushes, incidentally, have not been described.

Although nests have been reported for a number of species, it is only for the Black-faced Antthrush that the breeding behaviour has been studied in any real detail. With this species, incubation is undertaken by both sexes, the relieving bird entering the nest-hole before the other leaves. At one nest, incubation took 20 days. Feeding of the chicks is infrequent, with older nestlings each receiving 0.6 to 2.3 meals per hour. The parents clean the nest, apparently swallowing the droppings, until the young eventually climb up to the doorway to be fed, at which time nest sanitation is neglected. The nestling period is 18 days, although in rare instances it can be 19 or 20 days.

Several details are available for a few other formicariids. In the case of the Streak-chested Antpitta, incubation is also undertaken by both sexes, in long sessions lasting up to five hours; apparently, the female incubates at night. In the Variegated Antpitta, however, incubation appears to be carried out by the female alone, and the eggs take 17 days to hatch; both parents tend the nestlings. For the Scaled Antpitta, the nestling period was estimated to be 17-19 days, and both parents attended the nest. The incubation period of the much smaller Rusty-breasted Antpitta is 16-17 days, and fledging takes at least 13 days.

Some additional information has been acquired from studies made of captives. A clutch laid by a Rufous-faced Antpitta was artificially incubated and the eggs took about 15 days to hatch. The chicks were hand-reared and left the nest after a period of about 15 days, the young becoming fully independent two weeks after fledging.

Young antpittas sometimes abandon the nest a few days before they can fly. Since these birds are to a large extent terrestrial in their habits, this is perhaps not very surprising.

Finally, an interesting aspect of behaviour has been recorded for the Rusty-breasted Antpitta. The nestlings of this species, when discovered by an intruder, will "play possum", feigning death. It seems quite possible that this behaviour could be more widespread among the members of the family. Moreover, at one of three Rusty-breasted Antpitta nests which were watched, an adult feigned injury, distracting the observers' attention by hopping awkwardly, as if lame, and spreading its wings on the ground.

## Movements

As with the Rhinocryptidae, all species of the Formicariidae are believed to be sedentary. There have been a few reports of suspected seasonal altitudinal movements, but these may simply reflect seasonal variation in the detectability of these birds, as several species are known to vocalize for only part of the year (see Voice). In any case, ground-antbirds are poor fliers, and it is likely that they are incapable of performing long-distance migration. This is also indicated by their absence from temperate latitudes.

In coastal Venezuela, where seasonality of climate is pronounced, both the Black-faced Antthrush and the Short-tailed Antthrush have been reported to roost communally in the non-breeding season, the two species sometimes assembling together (see General Habits). As many as 20 Short-tailed Antthrushes have been found in a single bush at dusk. Although not far from their breeding grounds, these birds definitely appear to undertake some sort of migratory movements, presumably on foot.

## Relationship with Man

Ground-antbirds are little known to man, to whom their presence is normally manifested only through their loud songs. As a consequence, local names for the various species are almost invariably onomatopoeic.

Although the meat of these birds is tasty, the Formicariidae are in general so secretive, and occur at such low densities, that even the larger species are rarely hunted. Only the less secretive





Black-faced Antthrush is sufficiently common around human settlements that it is often hunted, generally by people using blowpipes as weapons. This is probably the sole ground-antbird that regularly adds protein to the pots of native tribes.

The only published account of a ground-antbird being held in captivity is that relating to four Rufous-faced Antpittas that were held in New York Zoo, in the USA, between 1968 and 1972. Although eggs finally hatched, after several unsuccessful breeding attempts, the young had to be reared by hand. The same zoo kept a single Chestnut-crowned Antpitta in its care for five years.

### Status and Conservation

The near-flightlessness, the sedentary habits and the narrow elevational distribution of many of the ground-antbirds render them prone to isolation. Several species have very small ranges, and, as with so many conservation problems, loss of habitat is the primary or sole threat to the eleven formicariids which are globally threatened, six of these listed as Endangered and five as Vulnerable, and to the nine which are considered Near-threatened.

None of the ground-antbirds is so seriously threatened as to merit the conservation status of Critical. Furthermore, all six Endangered species are suspected of having somewhat bigger ranges than those currently known for them, or of being commoner than they appear to be. This is because their songs have only recently become known, or because mist-nets have only recently been used in wet montane forest.

The Ochre-fronted Antpitta, which is confined to mossy wet forest in a small area in the northern part of the central Andes of Peru, was not discovered until 1976, and has been found in just two localities. There are, in fact, so few records of this antpitta that its ecology and biology are completely unknown, as also is its voice. At the same time, its habitat continues to shrink and to become fragmented, and protective measures appear to be inefficient. It is to be hoped that the use of mist-nets in field research will lead to the species being discovered in suitable habitat within its known range, and possibly elsewhere in the north Peruvian Andes.

All the other Endangered formicariids belong to the largest genus, *Grallaria*. The Tachira Antpitta remains unknown in life. The type series was collected in February 1955 and March 1956, at a single locality within what is now El Tamá National Park, an area of 1390 km<sup>2</sup> in west Venezuela. The four specimens were obtained in cloudforest, at 1800-2100 m, along the Río Chiquito. The only major search made for the species since then, in September 1990, was unsuccessful, but the presumed habitat of this antpitta was found to be largely intact. Some six years later, in December 1996, a further visit revealed that coffee plantations in the Chiquito Valley had extended upwards to 1600 m, while much of the forest at 1900-2200 m had been converted to agriculture. Again, there was no sign of the species, but adjacent valleys appeared to have suffered less disturbance. There is an urgent need for field surveys to be carried out in order to assess the current status of this virtually unknown antpitta, and to determine the real impact of defor-

**The White-throated Antpitta** is a restricted-range species, occurring in humid montane forests of the Bolivian and Peruvian Lower Yungas EBA, and further south in the Argentine and South Bolivian Yungas EBA. It is not thought to be threatened, or even Near-threatened, as it is locally common within this region. In Calilegua National Park the species is particularly abundant, even occurring in semi-deciduous forest and alder (*Alnus*) woodland with a dense understorey.

[*Grallaria albigula*, Calilegua National Park, Jujuy, Argentina. Photo: José & Adriana Calo]



**The Rufous-crowned Antpitta** is restricted to humid forests of the Chocó region in the Pacific lowlands of Colombia and northern Ecuador. Unfortunately, it shares this range with a high human population with the result that massive areas of ideal habitat have been destroyed or degraded by road-building, agricultural expansion and severe logging. Moreover, habitat protection in western Colombia is proving difficult because of an adverse security situation. Because of these pressures, the species is considered Near-threatened, with a high likelihood of becoming threatened in the future.

[*Pittasoma rufopileatum rosenbergi*. Photo: J. S. Dunning/ARDEA]



After its discovery in 1954, the **Rufous-fronted Antthrush** went unrecorded until 1982, when it was found in Manu National Park. Since then it has been recorded at several sites in the Madre de Dios drainage, and at one site in the Purus drainage. Its virtual restriction to damp riverside habitat with an understorey of Heliconia or bamboo means that its range is prone to colonization by people. The species is classed as Near-threatened.

[Formicarius rufifrons, Manu Wildlife Centre, Peru.

Photo: Bernard van Elegem]



estation. The degree to which mining concessions within the park would, or will, affect its habitat is not known.

Discovered as recently as in 1997, the Jocotoco Antpitta is known only from a very small area at the southern end of the Podocarpus National Park and the adjacent Tapichalaca Reserve, in south Ecuador. The reserve, covering about 10 km<sup>2</sup>, was in fact set up soon after this antpitta was discovered, with the particular aim of protecting the species, and it is managed with this objective in mind. This is important, as the part of the Podocarpus National Park in which this antpitta is found is threatened by human settlement and gold-mining activities. The Jocotoco Antpitta may have a wider distribution in the unexplored wilderness to the east, but it could well be among the least numerous of all ground-antbirds.

Another Endangered formicariid having a tiny range is the Brown-banded Antpitta, which is confined to the few remaining tracts of humid montane forest in a small part of the Central Andes of Colombia. It occurs in only a single protected area, the recently established Ucumari Regional Park in Risaralda department. Within the park's 42 km<sup>2</sup> it is not uncommon, having an estimated density of 1.3 individuals per hectare in one area. At present only about half of the park holds suitable habitat, but the remaining part is expected to regenerate rapidly. Considering the species' tolerance of disturbed habitats, its situation may perhaps not be too critical, but only so long as the continued existence of the park and the survival of other forest patches where the antpitta occurs can be ensured.

The remaining two Endangered *Grallaria* species are the Giant and the Moustached Antpittas, both of which live in the Andes of Colombia and Ecuador. Until the 1990s, these two were thought to have very small ranges and they were very poorly known species, primarily because their vocalizations had not been documented. After their songs became known, however, it was quickly discovered that these antpittas were present also in areas from which they had not previously been recorded, and it is possible that both may be better placed in the slightly lower-threat category of Vulnerable, rather than Endangered. Even so, continuing habitat loss and degradation remain a serious threat to both of them, and these problems are unlikely to be resolved in the near future. Neither species can be considered to be secure. Furthermore, the Colombian subspecies of the Giant Antpitta may already be extinct.

The five species which are classified as Vulnerable are the Masked Antpitta in the genus *Hyllopezus*, the Cundinamarca, the Great and the Bicoloured Antpittas in the genus *Grallaria*, and the Hooded Antpitta (*Grallaricula cucullata*). The first of those, the Masked Antpitta, occupies a very small range in the lowlands of north Bolivia, where it is found in three areas in the lower Río Beni drainage. It appears to have adapted reasonably well to disturbance of its habitat, which consists of low secondary forest and thickets with muddy areas, but little is known of its true dis-

tribution in this region. In addition, it has not been found in any protected areas. As with many other members of the family, the ecological requirements and breeding behaviour of the Masked Antpitta are not known.

In common with the previous species, the Cundinamarca Antpitta has not been recorded in any protected areas within its very small known range in Colombia, where it inhabits cloudforest on the east slope of the east Andes in Cundinamarca. Even if it is found to range more widely, little forest remains below 2000 m on the east slope of the Colombian Andes. The most suitable area for its protection would seem to be the forest remaining at Farallones de Medina, where this antpitta's presence has recently been established. It has been suggested that selective logging, as opposed to clear-cutting, may be of some benefit to this species, but this has yet to be proven.

Still in Colombia, the Bicoloured Antpitta occurs on both slopes of the central Andes southwards from south Antioquia, barely extending into northernmost Ecuador. Within this range, it is found locally in dense humid montane forest near the tree-line, appearing to favour primary vegetation. Although the species seems to be fairly common in a few places, and will tolerate a great deal of disturbance so long as forest cover is maintained, vast areas of its forest habitat have already been destroyed and forest loss continues. In north Ecuador, it is likely that all habitat suitable for this antpitta will have disappeared in the near future. Fortunately, it is present in several protected areas in Colombia.

Confined to humid montane forest at 1700-2300 m in north and west Venezuela, the Great Antpitta is another formicariid about which very little is known. Since its voice has not been documented with certainty, it is very difficult to assess the species' true status and distribution. Notwithstanding this, there are



The **Cundinamarca Antpitta**, classified as Vulnerable, is only known from two localities in the East Andes of Colombia where it receives no protection. Although it inhabits very wet primary and secondary forest, it seems to favour dense areas of regrowth, and thus it can thrive after selective logging. Nevertheless, an effective reserve is needed to ensure its long-term survival. The **Ochre-fronted Antpitta**, classified as Endangered, is perhaps even rarer. Most montane forest in its tiny range in northern Peru has already disappeared, and remaining patches continue to be lost through logging and conversion to agriculture. Further research into its status is required, along with proper protection of suitable habitat.

[Above: *Grallaria kaestneri*, Colombia.  
Photo: F. Gary Stiles/  
BirdLife]

Below: *Grallaricula ochraceifrons*,  
Abra Patricia, Peru.  
Photo: Jon Hornbuckle]





In 1997, the ornithological world was stunned by the discovery of a large and distinctive species of antpitta in the humid montane forests of southern Ecuador. By virtue of its reclusive habits, brief singing season and tiny range, the **Jocotoco Antpitta** had somehow evaded detection in a country well covered by ornithologists. It is categorized as **Endangered** and may be one of the least numerous of all ground-antbirds. Although it has been found to occur within Podocarpus National Park, legislation protecting this area is generally ignored and habitat is seriously threatened by gold mining and settlement. It is fortunate, therefore, that an area of suitable habitat lying outside park boundaries has been purchased to form the private Tapichalaca Reserve. Protection of further areas is desirable, as are surveys to determine whether its range is as narrow as currently seems, or whether it occurs elsewhere, perhaps southward into Peru.

[*Grallaria ridgelyi*,  
Cordillera Sabanilla,  
Zamora-Chinchipec,  
Ecuador.  
Photo: Doug Wechsler/  
VIREO]



The **Giant Antpitta** lives in montane evergreen forest, feeding largely on the giant *Rhynodrylus* earthworms that it pulls from damp soil and snips into bite-size sections. Long mythical, the species was finally tracked down in the 1990s. Armed with knowledge of its song, fieldworkers began to encounter it with increasing regularity, greatly improving our understanding of its range and status. It has proved fairly common in some areas on both slopes of the Ecuadorian Andes. In the light of this new information, its treatment as Endangered probably needs to be adjusted.

[*Grallaria gigantea*  
*hylodroma*,  
Pichincha, Ecuador.  
Photo: Bram  
Demeulemeester]



very few confirmed records of this antpitta, and it is thought likely to be rare and local in occurrence. Although considerable areas of forest have been destroyed within the species' presumed range, there is a good chance that it may persist in several protected zones. Once more, field surveys are required in order to establish the status and requirements of this antpitta.

The last of the five Vulnerable formicariids is the Hooded Antpitta of the Andes of north-west Venezuela and Colombia. Like the previous species, it inhabits humid montane forest and its voice is not known. In contrast to the Great Antpitta, however, the Hooded Antpitta is considered to be generally uncommon to fairly common, and even common in one or two areas. Despite that, the sites at which it is known to occur are few and widely scattered, and the destruction of forest habitat is continuing at most of these localities. On the positive side, recent surveys have located the species in a number of "new" places between these known sites, and it is to be hoped that additional fieldwork will provide reason for increased optimism. Furthermore, the Hooded Antpitta occurs in at least three protected areas, in one of which, the Cueva de los Guácharos National Park, it appears to be numerous.

Finally, nine species of Formicariidae are currently considered to be Near-threatened. These are the Rufous-fronted Anthrush, the White-browed, Elusive, Santa Marta and Chestnut Antpittas,

the Scallop-breasted Antpitta (*Grallaria loricata*) and its congeners the Peruvian and Crescent-faced Antpittas, and the Rufous-crowned Antpitta. Only one of these, the Elusive Antpitta, does not occur in any protected area, but it has a reasonably large range. The Rufous-fronted Anthrush was formerly thought to be restricted to a small area in south-east Peru and was classified as Vulnerable, but fieldwork during the 1990s revealed that its range was, in fact, far greater, extending into Brazil and Bolivia.

All but one of these nine Near-threatened formicariids is distributed in the western part of the Neotropics. The exception is the White-browed Antpitta, which lives in lush semi-deciduous forest and tall *caatinga* woodland in north-east Brazil. The main danger facing all of these ground-antbirds is, predictably, that of habitat destruction and degradation. The problem is perhaps most worrying in the case of the Rufous-crowned Antpitta in Colombia and north-west Ecuador; this is a species of lowland forest, most of which has disappeared and been replaced by agriculture and stock grazing, accompanied by human settlement.

In addition, two other *Grallaria* species, the Pale-billed and Yellow-breasted Antpittas, and perhaps also a third, the Rusty-tinged Antpitta, may merit the conservation status of Near-threatened. The Yellow-breasted Antpitta is found on the Pacific slope of the Andes in Colombia and north Ecuador and appears to be rare, while each of the other two has a very small range.

While the ecological requirements of many ground-antbirds are inadequately understood or, in many cases, completely unknown, deforestation is proceeding at an alarming rate in many parts of South America. In view of this, it is essential that all "protected areas" be given effective protection, and that proper controls be placed on such activities as logging and mining. There is also a very clear need for the establishment of as many additional protected areas as is possible. All this must, of course, be integrated with the real needs of the local inhabitants. Without effective conservation measures, it is likely that many species of bird, as well as other forms of wildlife, will disappear for good, some even before their very existence has become known to scientists.

#### General Bibliography.

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The **Moustached Antpitta** was long known only from two type specimens, one for each race. In recent years, however, the northern race was rediscovered at the Otún-Quimbaya Sanctuary in the Central Andes of Colombia, and the southern race on the Guacamayos ridge in the eastern Andes of Ecuador. Subsequent records have revealed this species to be quite widespread, at least in Ecuador.

[*Grallaria allenii*  
*andaquiensis*,  
Tandayapa, Ecuador.  
Photo: Iain Campbell]





PLATE 70

inches 4  
cm 10





## Genus *FORMICARIUS* Boddaert, 1783

### 1. Rufous-capped Antthrush

#### *Formicarius colma*

**French:** Tétéma colma **German:** Rostkappen-Ameisendrossel **Spanish:** Formicario Capirrojo  
**Other common names:** Colma Antthrush

**Taxonomy.** *Formicarius Colma* Boddaert, 1783. Cayenne.

Four subspecies recognized.

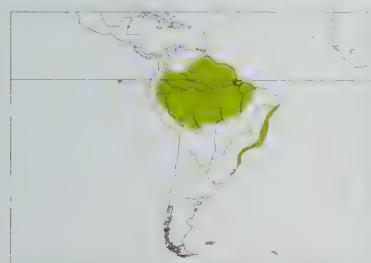
**Subspecies and Distribution.**

*F. c. colma* Boddaert, 1783 - E Colombia (S of R Vaupés), S & E Venezuela, the Guianas, and Brazil N of R Amazon.

*F. c. nigrifrons* Gould, 1855 - E Ecuador, E Peru, N Bolivia (S to La Paz), and Brazil S of R Amazon (E to R Madeira); reported presence in S Venezuela (Cerro Yapacana) unconfirmed.

*F. c. amazonicus* Hellmayr, 1902 - Brazil S of R Amazon, from R Madeira E to N Maranhão and S to R Ji-Paraná and S Mato Grosso.

*F. c. ruficeps* (Spix, 1824) - coastal E & SE Brazil from Pernambuco to Rio Grande do Sul.



**Descriptive notes.** 18 cm; male 38-49 g, female 41-49 g. Male has black forehead, rufous crown and nape, crown with variable number of black feathers; back, rump and wings olive-brown; tail dusky brown; sides of head and neck black, throat and upper breast black, merging into dark grey on lower breast; belly and flanks paler grey, sometimes with brown wash; underwing-coverts mixed black and cinnamon, inner webs of remiges dusky with broad cinnamon bar across base; iris brown; bill black; tarsus light grey-brown to purplish-grey. Female like male, often (possibly immatures) with largely white throat.

Juvenile has white throat usually with black spotting. Races differ little: *nigrifrons* is very like nominate, possibly with more black on head; *amazonicus* resembles previous but smaller, with shorter tail, deeper rufous on head, and browner upperparts; *ruficeps* has more extensive rufous on head. **VOICE.** Song is 4-6 seconds long, a trill at even pace of c. 14 notes per second, between 2-2 and 3 kHz, first falling, then rising in pitch; in SE Brazil (*ruficeps*) a horizontal trill; short, ascending tremolo also noted in Brazil (possibly race *ruficeps*). Calls include single, clear, whistled "pier", and a "psee-eh" like that of domestic chick, both very different from calls of other members of *Formicarius*.

**Habitat.** Shady floor of tall humid *terra firme* forest, less commonly transitional forest or *várzea*, or savanna forest (Surinam). Lowlands to 500 m, locally to 1100 m. Where occurring with *F. analis*, it is found mostly in higher ravines and on drier ridges, being replaced by that species in lower, poorly drained areas or in *várzea*, but factors controlling their distributions not fully understood.

**Food and Feeding.** Recorded food includes ants (Attninae) and grasshoppers (Locustidae, Tettigoniidae). Usually forages alone; walks delicately on the forest floor and on logs, picking prey from leaf litter, often flicking aside leaves with the bill. Frequently on periphery of swarms of army ants.

**Breeding.** Bird flushed from nest-cavity in Nov in Peru (Madre de Dios); juvenile in May in S Colombia (Putumayo) and others in Oct in NC Brazil (Manaus); birds with enlarged testes in Oct in S Brazil (Rio Grande do Sul); five birds in breeding condition in Apr in Venezuela (upper R Orinoco). Sings from ground. One nest found, was a cup in a hollow stub. Clutch 2 eggs, measuring 28.6-32.3 × 21.8-24 mm.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Generally rated as uncommon to fairly common; rather local in Ecuador; fairly common to common in Peru; rare in Rio Grande do Sul (SE Brazil). Possibly most numerous in S Venezuela, in the Guianas, and in the sand-belt forest of Vaupés region of Colombia. Occurs in many protected areas within its vast range, e.g. Imataca Forest Reserve and El Dorado (Venezuela), Cuyabeno Reserve (Ecuador) and Sooretama Biological Reserve (Brazil).

**Bibliography.** Aleixo & Galetti (1997), Anciães & Marini (2000a), dos Anjos & Schuchmann (1997), dos Anjos *et al.* (1997), Belton (1985), Bierregaard (1988), Borges *et al.* (2001), Brace *et al.* (1997), Buzzetti (2000), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Davis, L.I. (1978), Davis, S.E. *et al.* (1994), Goerck (1999a), Graves & Zusi (1990), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Kratter (1995), Marra & Remsen (1997), Meyer de Schauensee & Phelps (1978), Oniki & Willis (1982), Oren & Parker (1997), Parker & Bailey (1991), Parker & Goerck (1997), Parker & Remsen (1987), Peres & Whittaker (1991), Pinto (1978), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Robinson & Terborgh (1995, 1997), do Rosário (1996), Ruschi (1979), Schönwetter (1979), Schubart *et al.* (1965), Scott & Brooke (1985), Sick (1993), da Silva *et al.* (1990), Snyder (1966), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer (1997), Stratford & Stouffer (1999), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Thiollay & Jullien (1998), Tostain *et al.* (1992), Walther (2002a, 2002b), Willard *et al.* (1991), Willis (1985c, 1988b), Zimmer, J.T. (1932), Zimmer, K.J., Parker *et al.* (1997).

### 2. Mexican Antthrush

#### *Formicarius moniliger*

**French:** Tétéma du Mexique **German:** Mexikoameisendrossel **Spanish:** Formicario Mexicano

**Taxonomy.** *Formicarius moniliger* P. L. Selater, 1857. Córdoba, Veracruz, Mexico.

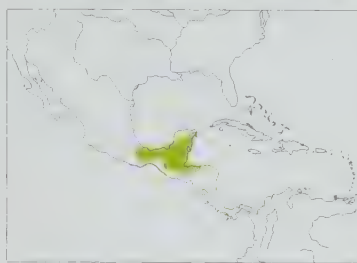
Formerly considered conspecific with *F. analis*, but differs in both plumage and song. Three subspecies recognized.

**Subspecies and Distribution.**

*F. m. moniliger* P. L. Selater, 1857 - Caribbean slope from S Mexico (S from C Veraguas) E to Guatemala (except Petén).

*F. m. pallidus* (Lawrence, 1882) - Yucatan Peninsula (in SE Yucatan, Campeche and Quintana Roo) and N Guatemala (N Petén).

*F. m. intermedius* Ridgway, 1908 - E Guatemala (presumed), Belize and NW Honduras.



**Descriptive notes.** 17 cm; male 56-66 g, female 59-67 g. Adult has dusky brown crown; area between eye and upper mandible black, white spot on lores, area below eye and on upper throat black, area behind eye and extending down in a band to lower throat rufescent brown; upperparts, including wings, brown, slightly more rufescent on nape and rump; tail blackish-brown; upper breast grey, becoming paler distally, centre of belly is almost white; undertail-coverts light brown; underwing-coverts mixed black and cinnamon, inner webs of remiges dusky with broad cinnamon bar across base; iris brown; exposed

orbital skin, widest just behind eye, pale blue; bill black; tarsus medium brown. Juvenile not described. Race *intermedius* is somewhat paler, especially on belly; *pallidus* is palest, with upperparts pale olive-brown, underparts pale grey. **VOICE.** Song 2 seconds long, a whistle at 1.7-2.5 kHz followed by pause, then 8-12 similar, slightly falling, shorter whistles at even pace. Call "p-tuk", sometimes run into rapid clucking series.

**Habitat.** Floor of humid evergreen and semi-deciduous forest and second growth, preferring well-shaded but fairly open understorey rather than dense brush. Lowlands to 1800 m, possibly to 2050 m. In E Honduras, occurs at higher elevations than *F. analis*.

**Food and Feeding.** Feeds on snails, beetles, lizards, even small snakes. Walks slowly and deliberately over the ground litter, sometimes flicking leaves about, feeding as it goes.

**Breeding.** Birds with active gonads in Apr-Jun in S Mexico; song given only during wet season. Sings from ground. Nest a mat of vegetation, placed in tree cavity within 3 m of ground. Clutch size not documented, eggs 28.3-29.6 × 22.7-24.1 mm.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Fairly common to common. Probably occurs in several protected areas. Tolerates considerable habitat disturbance, and not considered to be at any risk.

**Bibliography.** Anon. (1998a), Binford (1989), Brodtkorb (1943), Cory & Hellmayr (1924), Davis (1978), Hernández *et al.* (1995), Howell (1994), Howell & Webb (1995a), Jones & Valley (2001), Land (1970), Lowery & Dalquest (1951), Paynter (1955, 1957), Peterson & Chalif (1973), Ridgway (1911), Russell (1964), Schönwetter (1979), Smithe (1966), Valley & Whitman (1997), Van Tyne (1935), Wetmore (1943).

### 3. Black-faced Antthrush

#### *Formicarius analis*

**French:** Tétéma coq-de-bois

**German:** Graubrust-Ameisendrossel

**Spanish:** Formicario Enmascarado

**Other common names:** Rufous-necked Antthrush; Hoffmann's Antthrush (*hoffmanni*)

**Taxonomy.** *Myiothera analis* d'Orbigny and Lafresnaye, 1837, Yuracares and Chiquitos, Bolivia. Should probably be split into two or more species, as birds in Amazonian region have different song from those in C America; geographical variation (in voice and plumage) across entire range, however, not well documented. In addition, race *saturatus* may contain more than one taxon, as birds from Magdalena Valley (Colombia) give same song as those in C America, whereas birds from Lara (NW Venezuela) give the Amazonian song; situation difficult to assess, as songs of *virescens* and *griseoventris* undescribed; further study needed. Form *olivaceus*, described from N Peru, synonymized with *zamorae*. Eleven subspecies recognized.

**Subspecies and Distribution.**

*F. a. umbrosus* Ridgway, 1893 - Caribbean slope from C Honduras S to W Panama, and Pacific slope of Costa Rica (S to Gulf of Nicoya).

*F. a. hoffmanni* (Cabanis, 1861) - SW Costa Rica and W Panama (W Chiriquí).

*F. a. panamensis* Ridgway, 1908 - Panama (from Coelá to Darién) and adjacent NW Colombia.

*F. a. virescens* Todd, 1915 - W base of Santa Marta Mts, in N Colombia.

*F. a. griseoventris* Avelledo & Ginés, 1950 - N Colombia and NW Venezuela in W Maracaibo Basin (from Perijá Mts S to N Táchira and N Mérida).

*F. a. saturatus* Ridgway, 1893 - Venezuela N of R Apure and R Orinoco (W to E Maracaibo Basin and S slope of Andes); Trinidad; also Cauca, Magdalena and upper Sinú Valleys in N Colombia.

*F. a. connectens* Chapman, 1914 - Colombia E of Andes.

*F. a. crissalis* (Cabanis, 1861) - extreme E Venezuela, the Guianas and NE Brazil (Amapá, Pará).

*F. a. zamorae* Chapman, 1923 - E Ecuador, N & NE Peru and W Brazil (N of R Solimões, E to Codajás).

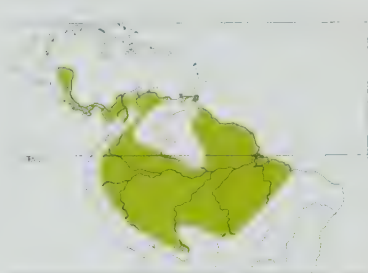
*F. a. analis* (d'Orbigny & Lafresnaye, 1837) - E & SE Peru S of R Amazon (from Ucayali drainage) and N Bolivia E to C Brazil (E to R Tapajós and Mato Grosso).

*F. a. paraensis* Novaes, 1957 - E Brazil from R Tapajós E to Belém and W Maranhão.

**Descriptive notes.** 17 cm; male 45-67 g, female 54-69 g. Adult has dusky brown crown; area between eye and upper mandible black, lores with white spot; rear side of head, back, wings and rump brown, uppertail-coverts tinged with rufescent brown, tail blackish-brown; chin and throat black, upper breast dark grey, rest of underparts grey, palest on centre of belly, flanks washed with brown, undertail-coverts rufous; underwing-coverts mixed black and cinnamon, inner webs of remiges dusky with broad cinnamon bar across base; iris brown; exposed orbital skin, widest just behind eye, blue-grey; bill black; tarsus grey-brown. Juvenile has whitish throat with dark spots. N races *umbrosus* and *hoffmanni* have extensive chestnut patch on neck side; *panamensis* has smaller neck patch, is paler below; *virescens* is paler below, and more olivaceous on the upperparts; *griseoventris* is also dark, with less chestnut; *saturatus* is very dark, with chestnut patch smaller and less contrasting; *connectens* similar to previous, but chestnut neck patch faint or absent; *crissalis* usually has white loreal spot most prominent, has greyish-cinnamon side of neck, much paler under-

On following pages: 4. Black-headed Antthrush (*Formicarius nigricapillus*); 5. Rufous-fronted Antthrush (*Formicarius rufifrons*); 6. Rufous-breasted Antthrush (*Formicarius rufipectus*); 7. Short-tailed Antthrush (*Chamaeza campanisona*); 8. Striated Antthrush (*Chamaeza nobilis*); 9. Rufous-tailed Antthrush (*Chamaeza ruficauda*); 10. Cryptic Antthrush (*Chamaeza meruloides*); 11. Schwartz's Antthrush (*Chamaeza turdina*); 12. Barred Antthrush (*Chamaeza mollissima*).





Call a short "kweep".

**Habitat.** Floor of humid mature forest and tall second growth, both seasonally flooded and *terra firme*; lowlands to 1000 m, in N Venezuela to 1700 m, in Pacific S Costa Rica to 1500 m. In Amazonia mainly in second growth and *várzea*, and replaced on higher ground by *F. colma*; in some areas, however, factors determining their distributions not fully understood. On Pacific coast of Colombia and in Central America, replaced in wet, usually higher-lying forest by *F. nigricapillus*; on Caribbean slope of Costa Rica, where latter is absent, generally occurs to higher elevations. In E Honduras, occurs at lower elevations than *F. moniliger*.

**Food and Feeding.** Insects, snails, spiders, other invertebrates; rarely, small snakes, lizards, frogs, crabs, fish; fallen fruit taken very occasionally. Forages solitarily. Walks sedately on ground with tail cocked, flicking aside leaves with bill as it moves steadily in one direction, picking up food items; from time to time perches briefly on fallen branch or stump. Perches rarely on higher branches, 3-5 m up, to rest and preen. Sometimes feeds on periphery of an army-ant swarm. Observed to regurgitate pellet of indigestible parts of prey.

**Breeding.** Paired throughout year; active nests in Mar-Sept in Costa Rica, in May in Panama, and in Mar and Sept in Trinidad; birds in breeding condition in Feb-Jul in NW Colombia. May rear two, occasionally three, broods in succession. Sings from ground. Nest a mat of slender petioles and flower stalks resting on a pad of coarse dead leaves, placed in slender hollow trunk, stump or tap root, often far down, once 35 cm below ground; entrance 0.5-3.5 m above the ground, opening upwards or to the side, or both. Clutch 2 eggs, 25.2-32 × 21.1-23.5 mm; incubation by both sexes, period 20 days in one nest; newly hatched young covered in long, spreading, dark grey down; chicks fed infrequently, older nestlings each receiving 0.6-2.3 meals per hour; parents clean nest, apparently swallowing chicks' droppings, but sanitation neglected from the time when young climb up to entrance to be fed; nestling period 18 days, rarely 19 or 20 days.

**Movements.** Mostly sedentary; in coastal Venezuela, reportedly roosts communally during non-breeding season, sometimes together with *Chamaeza campanisona*.

**Status and Conservation.** Not globally threatened. Generally fairly common to common; uncommon to locally common in Ecuador; common in Venezuela and Peru. On Barro Colorado I, Panama, where formerly common, was last seen in 1951 and now considered extinct. Occurs in numerous protected areas within its vast range. Tolerates considerable habitat disturbance; to date, no potential threats identified.

**Bibliography.** Anon. (1998a), Aveledo & Ginés (1953), Balchín & Toyne (1998), Bierregaard (1988), Blake & Loiselle (2000, 2001), Borges *et al.* (2001), Brace *et al.* (1997), Burton (1975), Canaday & Jost (1999), Cody (2000), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Davis (1978), French (1991), Francis *et al.* (1999), Gillespie (2001), Graves & Zusi (1990), Haffer (1967a, 1975), Haffer & Fitzpatrick (1985), Haverschmidt & Mees (1994), Herklots (1961), Hilty (2003a), Hilty & Brown (1986), Howell, S.N.G. (1994), Howell, T.R. (1957), Kratter (1995), Marra & Remsen (1997), Mee *et al.* (2002), Meyer de Schauensee & Phelps (1978), Novaes (1957a), Oren & Parker (1997), Peres & Whittaker (1991), Perry *et al.* (1997), Phelps & Phelps (1955), Pinto (1978), Poulin & Lefebvre (1996), Ridgely & Greenfield (2001), Ridgely & Gwyne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robbins *et al.* (1985), Robinson & Terborgh (1995, 1997), Ruschi (1979), Schäfer (2002), Schönwetter (1979), Schubert *et al.* (1965), Sick (1993), da Silva *et al.* (1990), Skutch (1969c), Slud (1964), Snyder (1966), Stiles (1985), Stiles & Skutch (1989), Stiles *et al.* (1999), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer (1997), Stratford & Stouffer (1999), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Temple (2002), Thiollay & Jullien (1998), Tostain *et al.* (1992), Vereá *et al.* (1999), Wetmore (1972), Willis (1985c), Willis & Eisenmann (1979), Zimmer, J.T. (1931), Zimmer, K.J., Parker *et al.* (1997).

## 4. Black-headed Antthrush

### *Formicarius nigricapillus*

**French:** Tétéma à tête noire

**Spanish:** Formicario Cabecinegro

**German:** Schwarzkopf-Ameisendrossel

**Taxonomy.** *Formicarius nigricapillus* Ridgway, 1893, Buena Vista, Costa Rica.

Two subspecies recognized.

**Subspecies and Distribution.**

*F. n. nigricapillus* Ridgway, 1893 - Caribbean slope of Costa Rica and both slopes of Panama (E to W San Blas).

*F. n. destructus* Hartert, 1898 - Pacific Colombia and Ecuador.



**Descriptive notes.** 18 cm; two males 59 g and 68 g, two females 58 g and 61.5 g. Adult has dark dusky brown to blackish crown, black side of head, black throat; back, rump and wings dark chestnut-brown, uppertail-coverts dark rufescent brown, tail black; upper breast blackish-grey, shading to grey on centre of belly, undertail-coverts rufous; underwing-coverts mixed black and cinnamon, inner webs of remiges dusky with broad cinnamon bar across base; iris brown; exposed orbital skin, widest just behind eye, bluish-white; bill black; tarsus dusky brown. Juvenile not described. Race *destructus* is very similar to nominate, but

upperparts on average darker, less reddish-tinged. **VOICE.** Song 4-5 seconds long, by both sexes throughout year, a trill of c. 10 notes per second at 1.5-2 kHz, first falling, then rising in pitch. Call a short "chweep", very like call of *F. analis* but slightly lower-pitched.

**Habitat.** Wet primary forest and adjacent tall second growth, favouring ravines and other places with very dense undergrowth. Lowlands to 900 m, occasionally to 1800 m. Below *F. rufipectus* and mainly above *F. analis* where their ranges overlap.

**Food and Feeding.** Food includes a variety of arthropods, i.e. crickets (Gryllidae), cockroaches (Blattodea), earwigs (Dermaptera), woodlice (Isopoda), spiders; also tiny reptiles and frogs. Forages alone, occasionally in pairs. Walks on forest floor cautiously and deliberately, with tail cocked, peering into crevices, tangles, under fallen branches; sometimes flips leaves with bill.

**Breeding.** Eggs in Apr-May in Costa Rica; 5 birds in breeding condition in Dec-Mar in Colombia (Chocó and Valle); territorial throughout year. Sings from ground. Nest a shallow bulky cup of leaf petioles with a few dead leaves, placed c. 1 m down inside hollow palm stump 2 m tall, with epiphyte-covered entrance. Clutch 2 eggs, 29.4 × 22.3 mm.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common. Occurs in several protected areas, e.g. Manglares-Churute Ecological Reserve and Rio Palenque Science Centre, Ecuador. Despite extensive loss of habitat, does not appear threatened; able to survive in isolated and fairly small patches of forest, e.g. in Ecuador.

**Bibliography.** Allen (1998), Anon. (1998a), Blake (1958), Butler (1979), Cory & Hellmayr (1924), Haffer (1967a), Hilty & Brown (1986), Kirwan & Marlow (1996), Meyer de Schauensee (1982), Pople *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Gwyne (1989), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Ridgway (1911), Rodner *et al.* (2000), Salaman (1994), Schönwetter (1979), Slud (1964), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Taylor (1995), Wetmore (1972), Willis (1985c), Young *et al.* (1998).

## 5. Rufous-fronted Antthrush

### *Formicarius rufifrons*

**French:** Tétéma à front roux

**Spanish:** Formicario Frentirrufo

**German:** Roststirn-Ameisendrossel

**Taxonomy.** *Formicarius rufifrons* Blake, 1957, Madre de Dios, south-east Peru.

Monotypic.

**Distribution.** Extreme W Brazil in NW Acre (upper R Juruá), SE Peru in Madre de Dios and Cuzco (R Urubamba), and NW Bolivia in W Pando (R Tahuamanu).



**Descriptive notes.** 18 cm; one male 54 g, one female 57 g. Adult has forehead bright orange-rufous, feathers along front edge of eye and down to base of bill dusky brown, side of head grey-brown; crown and upper back olive-brown, lower back, wings and rump medium brown, rump slightly more rufescent, tail grey; throat and breast dark grey, flanks dark grey to olive-brown, centre of belly grey; entire underwing bright cinnamon; iris brown; exposed orbital skin, widest behind eye, grey; bill black; tarsus dull pink to reddish-flesh. Juvenile undescribed. **VOICE.** Song c. 5 seconds long, given at intervals of 14-16 seconds for

many minutes at a time, a series of c. 18 evenly paced, similar notes between 1.7 and 2.2 kHz, first note slightly longer, fourth or fifth higher-pitched, following ones gradually lower. Call undescribed.

**Habitat.** Swampy forest on dynamic floodplains, favouring edges of dense *Heliconia* thickets or small stands of *Guadua* bamboo in transition zone between tall forest with shaded understorey and more open second-growth with very dense layer of vegetation close to ground. At 350-400 m.

**Food and Feeding.** Feeds on a variety of invertebrates, such as ants, orthopterans, weevils (Curculionidae) and other beetles, pea bugs, snails, butterfly larvae, centipedes (Chilopoda); in two stomachs examined, ants were main item. Picks prey from leaf litter while walking on the forest floor; behaviour much as that of *F. analis*, to which it appears to be subdominant, but ecological differences between the two are unknown.

**Breeding.** One specimen in Sept had enlarged testes. Sings from ground. No other information.

**Movements.** Probably wanders short distances locally; most observations are of single males trying to establish new territories, probably as a result of floodplain dynamics.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species; present in South-east Peruvian Lowlands EBA. Rare to uncommon, and very local. Study based on extrapolation from known density data, and using satellite images to assess extent of suitable habitat in SE Peru, produced estimated total population of 700-3500 pairs. Subsequently, in 1990s, this poorly known species was discovered at additional sites, in NW Bolivia and SW Brazil; presumably, total population could be several times larger than that published estimate. Even so, the species has a restricted distribution, and is vulnerable to habitat loss. 80% of population may be vanishing owing to human colonization, and remaining 20% are found within two protected areas in Peru, i.e. Manu National Park and Biosphere Reserve, and the Tambopata-Candamo Reserved Zone. Nevertheless, even within these reserves, its preferred habitat of forested land within 500 m of the river is difficult to protect against human settlement, which may cause severe fragmentation of the species' range.

**Bibliography.** Alverson *et al.* (2000), Angehr & Auca (1997), Blake (1957), Collar & Andrew (1988), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Donahue (1994), Kratter (1995), Meyer de Schauensee (1982), Parker (1983), Ridgely & Tudor (1994), Robinson & Terborgh (1995, 1997), Sagot (1998b), Stattersfield & Capper (2000), Stotz *et al.* (1996), Terborgh *et al.* (1984), Wege & Long (1995), Whittaker & Oren (1999).

## 6. Rufous-breasted Antthrush

### *Formicarius rufipectus*

**French:** Tétéma à poitrine rousse

**Spanish:** Formicario Pechirrufo

**German:** Rostbrust-Ameisendrossel

**Taxonomy.** *Formicarius rufipectus* Salvin, 1866, Santiago de Veraguas, Panama.

Four subspecies recognized.

**Subspecies and Distribution.**

*F. r. rufipectus* Salvin, 1866 - Caribbean slope of Costa Rica and both slopes in W Panama; also E Panama (Darién).

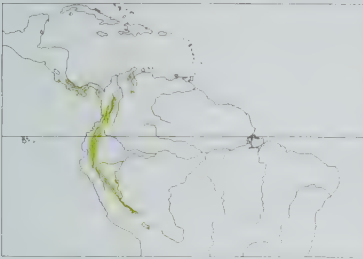
*F. r. lasallei* Aveledo & Ginés, 1952 - NW Venezuela in Perijá Mts and SW Táchira.

*F. r. carrikeri* Chapman, 1912 - W & C Andes of Colombia S to W Ecuador.

*F. r. thoracicus* Taczanowski & Berlepsch, 1885 - from E Ecuador S to SE Peru (S to Cuzco).

**Descriptive notes.** 18-19 cm; male 70-78 g, female 65-82 g. Adult has crown, nape and neck side dark chestnut, side of face and throat blackish; back and wings dark brown, rump and uppertail-coverts dark rufescent brown; breast rufous-chestnut, belly pale rufous, flanks olive-brown, vent dark chestnut; underwing-coverts mixed black and cinnamon, inner webs of remiges dusky with





broad cinnamon bar across base; iris brown or reddish-brown; exposed orbital skin, wider just behind eye, bluish-white; bill black; tarsus dusky brown or dark grey. Juvenile is duller, with whitish throat; immature with rufous of underparts duller and confined to breast, throat dusky. Race *carrikeri* has paler underparts, more slaty above, with dusky forecrown; *lasallei* has black crown, less red on head; *thoracicus* is also black-crowned, has even less red on head, belly more olive, less rufous. VOICE. Song by both sexes, 0.5-0.6 seconds long, two clear whistles at 1.8-2 kHz, "toot-toot", second note sometimes slightly higher-

pitched in *rufipectus*, usually so in *carrikeri*, perhaps never in *thoracicus*. Call a double-noted chirp, virtually indistinguishable from calls of *F. analis* and *F. nigricapillus*, but intermediate in pitch; alarm a series 2-3 seconds long of 5-10 call-like notes; sometimes a dry, snapping "snuk" when disturbed.

**Habitat.** Humid to wet primary forest and adjacent tall second growth, including *Heliconia* thickets, particularly in dense low vegetation in ravines, adjacent to landslides, and on steep slopes; 850-2400 m, locally to 3100 m. Where it meets *F. nigricapillus*, replaced abruptly by that species at lower levels.

**Food and Feeding.** Diet not documented. Alone or in pairs; walks on forest floor with cocked tail. A pair was seen at a swarm of army ants, but species not present at 17 other swarms. Sharp replacement by *F. nigricapillus* suggests similar habits to those of that species.

**Breeding.** One in breeding condition in Jun in Colombia (Antioquia), and an immature seen in Nov in NW Ecuador. Sings from ground. No other details.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Very local. Uncommon or rare in some places, e.g. Costa Rica and Peru; fairly common or locally common in others, e.g. NW Venezuela, SW Colombia (W Nariño) and parts of Ecuador. Occurs in several protected areas, e.g. La Planada Nature Reserve, Colombia, and Machu Picchu Historical Sanctuary, Peru.

**Bibliography.** Allen (1998), Anon. (1998a), Aveledo & Ginés (1952), Bloch *et al.* (1991), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hernández *et al.* (1995), Hilty (2003a), Hilty & Brown (1986), Kirwan & Marlow (1996), Meyer de Schauensee & Phelps (1978), Parker *et al.* (1982), Ridgely & Greenfield (2001), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Ridgway (1911), Robbins & Ridgely (1990), Robbins *et al.* (1985), Rodner *et al.* (2000), Salaman (1994), Schulenberg & Awbrey (1997a), Slud (1964), Stiles (1985), Stiles & Skutch (1989), Stiles & Smith (1980), Stotz *et al.* (1996), Taylor (1995), Valley (2001), Walker (2001), Wetmore (1972), Williams & Tobias (1994), Young *et al.* (1998), Zimmer (1932f).

Genus *CHAMAEZA* Vigors, 1825

7. Short-tailed Antthrush

*Chamaeza campanisona*

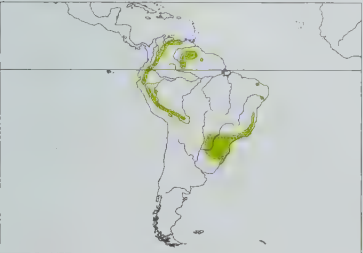
**French:** Tétéma flambé **German:** Streifenbrust-Ameisendrossel **Spanish:** Tovacá Colicorto

**Other common names:** Northern Short-tailed Antthrush (N & W races); Southern Short-tailed Antthrush (E & SE races)

**Taxonomy.** *Myiothera campanisona* M. H. K. Lichtenstein, 1823. São Paulo, south-east Brazil. Taxonomic divisions uncertain, and races should possibly be grouped into up to four separate species. The four large, dark forms of Venezuelan and Guyanese tepuis (*yavii*, *huachamacarii*, *obscura*, *fulvescens*) form a group, having voice similar but not identical to that of N Andean birds; song recorded in Bolivia also differs distinctly from latter's. Race *tshororo* considered doubtfully distinct from nominate. Twelve subspecies recognized.

**Subspecies and Distribution.**

- C. c. venezuelana* Menegaux & Hellmayr, 1906 - NW Venezuela in interior chain in Aragua and coastal mountains and Andes W to W Táchira.
- C. c. yavii* Phelps, Sr. & Phelps, Jr., 1947 - Cerro Yavi, in SC Venezuela.
- C. c. huachamacarii* Phelps, Sr. & Phelps, Jr., 1951 - S Venezuela on Cerro Huachamacari.
- C. c. obscura* J. T. Zimmer & Phelps, Sr., 1944 - SE Venezuela in Bolívar (including Gran Sabana, except Mt Roraima) and S Amazonas (Cerro Calentura and Cerro de la Neblina).
- C. c. fulvescens* Salvin & Godman, 1882 - E Venezuela (Mt Roraima) and W Guyana.
- C. c. columbiana* Berlepsch & Stolzmann, 1896 - Amazonian slope of Andes in Colombia.
- C. c. punctigula* Chapman, 1924 - E Ecuador and N Peru (N of R Marañón).
- C. c. olivacea* Tschudi, 1844 - C Peru.
- C. c. berlepschi* Stolzmann, 1926 - SE Peru; presumably also extreme W Bolivia (extreme W La Paz).
- C. c. boliviana* Hellmayr & Seilern, 1912 - Andean slope of Bolivia from La Paz SE to Santa Cruz.
- C. c. campanisona* (M. H. K. Lichtenstein, 1823) - E & SE Brazil locally in Ceará (Serra do Baturité) and Alagoas (Quebrangulo) and from S Bahia S to Santa Catarina.
- C. c. tshororo* W. Bertonio, 1901 - E Paraguay, S Brazil (S Mato Grosso do Sul, W Paraná, Rio Grande do Sul) and NE Argentina (Misiones, Corrientes).



**Descriptive notes.** 19-20 cm; 64-112 g. Adult has crown rufescent brown or brown; black spot on forehead directly above bill, white lores, white postocular streak; back, wings and uppertail-coverts olive-brown; tail brown with black subterminal band, narrow buff or whitish tips broadest and most conspicuous on underside; throat white, lightly spotted black, rest of underparts off-white, upper breast and crissum with rich buff wash, breast and flanks broadly streaked black, centre of belly unmarked or only lightly marked, crissum with scattered black bars or spots; iris dark brown; bill black, base of lower mandible pale pink-

ish-grey; tarsus brownish-grey. Juvenile not described. Race *venezuelana* has unmarked white throat, white cheekstripe; *yavii*, *huachamacarii* and *obscura* are all larger, darker, shorter-tailed, with throat and underparts deeper fulvous or buff; *fulvescens* similar to last, has deep ochraceous of breast contrasting with paler buff throat and with white belly, flank markings more as scallops than as streaks; *columbiana* has breast and crissum palest buff; *punctigula* is similar, but crissum almost white; *olivacea* has pale head markings buff, lores ochraceous, crissum plain buff, central pair of rectrices sometimes all brown; *berlepschi* has throat and breast rich buff, sometimes fully brown central rectrices; *boliviana* often has black subterminal tailband broken; *tshororo* is very like nominate, and indeed doubtfully distinct. VOICE. Song of *punctigula* and *venezuelana* of two parts, a series 4-7 seconds long of 10-25 hollow, initially accelerating whistles at c.1 kHz with volume steadily rising, followed abruptly by series of 5-11 "whoop" notes at falling pitch (to c. 0.6 kHz) and volume for 3-4 seconds; *boliviana* song much faster, c. 50 notes in first part (pace up to 9 per second) followed by 15-20 "whoop" notes; song of nominate with relatively fast first part (7 notes per second) followed by only 2-4 "whoop" notes. Calls include a falling (2-1.8 kHz) series lasting 2-5.3 seconds of c. 20 gurgles, the last (or last two) hesitant and rising; a sharp "quock"; also a whistled "quick" at 1.97 kHz, similar in quality and only slightly lower in pitch than that of *C. meruloides*, slightly higher and with more poorly defined top pitch than call of *C. turdina*.

**Habitat.** Humid montane forest and mature secondary woodland, usually with fairly open understorey; also dry forest in interior SE Brazil. Mostly at 500-1200 m; on N slope of coastal mountains of Venezuela down to 50 m (below *C. turdina*); in Andes at 900-1800 m; in SE Brazil to 1000 m locally, but below *C. meruloides* where both occur; also occurs at lower elevations than *C. ruficauda*, where their ranges overlap.

**Food and Feeding.** Diet varied, including spiders, insects and fruit. Alone, less commonly in pairs. Almost entirely terrestrial. Walks on forest floor or logs, slowly or jauntily, twitching short tail downwards, flipping leaves as it goes. Rarely follows army ants.

**Breeding.** Breeds in May-Jul in coastal Venezuela; birds with enlarged testes in Sept in NE Argentina (Corrientes) and in Sept-Dec in SE Brazil (Rio Grande do Sul). Sings from elevated perch, usually near ground, occasionally 5-6 m up. Nest placed up to 2 m above the ground in crevice in bank or rotten stump. Clutch 2 eggs, 25.7-28.3 × 21.4-23.5 mm.

**Movements.** Mainly resident; during non-breeding season in coastal Venezuela, communal roosts with up to 20 individuals in a single bush, sometimes together with *Formicarius analis*.

**Status and Conservation.** Not globally threatened. Generally uncommon to locally fairly common; uncommon in Peru, locally fairly common in Venezuela. Occurs in several protected areas within its large range, including Henri Pittier National Park, in Venezuela, Iwokrama Forest Reserve, in Guyana, Serra dos Órgãos National Park and Pedra Talhada State Park, in Brazil, and Iguazú National Park, in Argentina.

**Bibliography.** Aleixo & Galetti (1997), dos Anjos & Schuchmann (1997), dos Anjos *et al.* (1997), Balchín & Toyne (1998), Barnett *et al.* (2002), Belton (1985), Bencke & Kindel (1999), Boesman (1998), Buzzetti (2000), Canevari *et al.* (1991), Chapman (1931), Chebez *et al.* (1999), Cory & Hellmayr (1924), Darrieu & Camperi (1991), Fjeldså & Majer (1996), Fraga & Narosky (1985), Goerck (1999a), Gonzaga *et al.* (1995), Hayes (1995), Herzog *et al.* (1999), Hilty (2003a), Hilty & Brown (1986), Laubmann (1939), Madroño, Robbins & Zyskowski (1997), Mauricio & Dias (1998), Meyer de Schauensee & Phelps (1978), Parker & Goerck (1997), Parker *et al.* (1982), de la Peña (1988), Perry *et al.* (1997), Pinto (1978), Raposo & Teixeira (1992), Reinert *et al.* (1996), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), do Rosário (1996), Ruschi (1979), Schäfer (2002), Schönwetter (1979), Schulenberg & Awbrey (1997a), Scott & Brooke (1985), Short (1971), Sick (1993), Snyder (1966), Stotz *et al.* (1996), Straneck & Carrizo (1990d), Teixeira *et al.* (1988), Willis (1985c, 1992a), Zimmer (1932f), Zimmer & Phelps (1944).

8. Striated Antthrush

*Chamaeza nobilis*

**French:** Tétéma strié **German:** Weißkehl-Ameisendrossel **Spanish:** Tovacá Noble

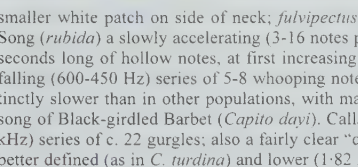
**Other common names:** Noble Antthrush

**Taxonomy.** *Chamaeza nobilis* Gould, 1855, Chamicuro, Peru. Race *fulvipectus*, which differs vocally from other races, possibly a separate species; racial identity of birds from EC Amazonian Brazil (R Purús E to R Madeira), however, is uncertain; further study needed. Three subspecies recognized.

**Subspecies and Distribution.**

- C. n. rubida* J. T. Zimmer, 1932 - N of R Amazon in SE Colombia, E Ecuador and NE Peru; presumably also in immediately adjacent W Brazil.
- C. n. nobilis* Gould, 1855 - S of R Amazon from E Peru (S from Huallaga Valley) E to WC Brazil (E to at least R Purús, especially to R Madeira) and S to extreme NW Bolivia.
- C. n. fulvipectus* Todd, 1927 - NC Brazil at Santarem, left bank of R Tapajós; probably also including birds W to R Madeira and possibly those S to N Rondônia.

**Descriptive notes.** 22.5 cm; three males 120-152 g, female 119-150 g. Adult has crown dark rufescent brown, lores white or buff; white postocular streak, white spot on side of neck between auriculars and wing; back, rump and wings dark rufescent brown to brown, tail dark olive-brown with black subterminal band and narrow white tip; underparts white, breast and flank feathers broadly edged with black, centre of belly unmarked or only lightly scalloped, crissum lightly washed buff and lightly marked with black; iris dark brown; bill black, base of lower mandible pinkish-brown; tarsus dark grey. Juvenile not described. Race *rubida* has



smaller white patch on side of neck; *fulvipectus* has breast rich yellow-ochre, not white. VOICE. Song (*rubida*) a slowly accelerating (3-16 notes per second) and rising (550-600 Hz) series 11-12 seconds long of hollow notes, at first increasing in volume, followed by a shorter (2-3 seconds) falling (600-450 Hz) series of 5-8 whooping notes at decreasing volume; song of *fulvipectus* distinctly slower than in other populations, with many fewer notes, at distance sounding not unlike song of Black-girdled Barbet (*Capito dayi*). Calls (*rubida*) include a 3-7-second falling (1.65-1.4 kHz) series of c. 22 gurgles; also a fairly clear "quick" like that of *C. campanisona*, but top pitch better defined (as in *C. turdina*) and lower (1.82 kHz).

**Habitat.** Humid forest, especially in *terra firme* forest where undergrowth is sparse. Lowlands to 700 m, occasionally to 1000 m.

**Food and Feeding.** Diet not documented. Alone or in pairs; walks slowly on the forest floor.

**Breeding.** Fledging recorded in mid-Jun in Colombia. Only nest known, in a cavity 3 m above ground in a live tree; cavity 30 cm deep, contained a few feathers but no lining; single young fledged.



**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Generally uncommon; rare to locally fairly common in Ecuador; rare to uncommon or fairly common in Peru. Difficult to locate, however, as it tends to be quiet for several weeks at a time. Occurs in several protected areas within its vast range.

**Bibliography.** Allen (1995), Butler (1979), Cadena, Londoño & Parra (2000), Cory & Hellmayr (1924), Donahue (1994), Hilty & Brown (1986), Oren & Parker (1997), Parker (1982), Parker & Remsen (1987), Parker, Castillo *et al.* (1991), Parker, Parker & Plenge (1982), Peres & Whittaker (1991), Pinto (1978), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Ruschi (1979), Sick (1993), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Tallman, D.A. & Tallman (1997), Tallman, E.J. & Tallman (1994), Taylor (1995), Terborgh *et al.* (1984), Zimmer, J.J. (1932), Zimmer, K.J., Parker *et al.* (1997).

## 9. Rufous-tailed Antthrush

### *Chamaeza ruficauda*

**French:** Tétéma à queue rousse

**Spanish:** Tovacá Colirrufo

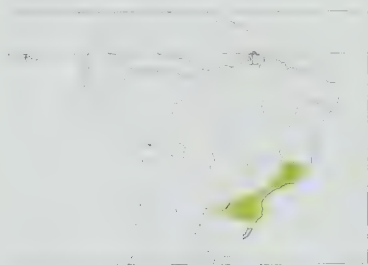
**German:** Südliche Rostschwanz-Ameisendrossel

**Other common names:** Brazilian Antthrush

**Taxonomy.** *Chamaeza ruficauda* Cabanis and Heine, 1859, no locality = Rio de Janeiro, south-east Brazil.

Was long confused with *C. meruloides*, but has recently been found to have different song. Formerly treated as conspecific with *C. turdina*, but exhibits vocal and plumage differences and is widely separated geographically. Monotypic.

**Distribution.** SE Brazil from E Minas Gerais and Espírito Santo S to N Rio Grande do Sul, and NE Argentina (Misiones).



**Descriptive notes.** 19-19.5 cm; 63.5-125 g. Adult has crown rufescent brown, lores white; white postocular streak, whitish patch on neck side; upperparts and wings rufescent brown, rump and uppertail-coverts slightly more rufescent; tail uniform rufescent brown; throat white with fine blackish spots often forming a narrow malar stripe, lower belly white, remainder of underparts buff, deepest on breast, breast and flanks extensively streaked black, crissum barred with blackish; iris dark brown; upper mandible brownish-black, lower pinkish-white with dark edges distally; tarsus light pink-tinted brownish-grey. Differs from *C. turdina*

in buff underparts with streaked, rather than scalloped, pattern. Juvenile not described. **VOICE.** Song only 3-4 seconds long, a rapid series of hollow notes at even pace (12-15 per second), increasing in volume and pitch (0.8-1.4 kHz), levelling at end. Call a 0.2-second trill of 4-5 notes, "wh'h'h'ert", at 1.8-2.3 kHz.

**Habitat.** Humid montane forest, forest borders, and mature secondary woodland, mostly where undergrowth is dense. At 1000-2200 m; lower in S, occurring down to 600 m in Argentina. Occurs at higher elevations than *C. campanisona* and *C. meruloides* where their ranges overlap.

**Food and Feeding.** Diet includes spiders and ground insects. Grit is frequently ingested. Alone or in pairs; walks slowly on the forest floor.

**Breeding.** Specimens in Nov from Rio Grande do Sul had enlarged testes. Territory small, 50 × 50 m. Sings from elevated perch. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Atlantic Forest Mountains EBA. Fairly common to common; scarce in Rio Grande do Sul. Difficult to locate, as it sings only in part of the year, e.g. silent in Rio Grande do Sul during Jun-Sept. Occurs in several protected areas, e.g. Itatiaia, Serra dos Órgãos and Aparados da Serra National Parks.

**Bibliography.** dos Anjos & Schuchmann (1997), dos Anjos *et al.* (1997), Belton (1985), Buzzetti (2000), Cordeiro (2001), Cory & Hellmayr (1924), Fjeldsá & Krabbe (1990), Holt (1928), Mazar Barnett & Pearman (2001), Meyer de Schauensee (1982), Navas & Bö (1995), Parker & Goerck (1997), Pearman (2001), Pinto (1978), Raposo & Teixeira (1992), Reinert *et al.* (1996), Ridgely & Tudor (1994), do Rosário (1996), Scott & Brooke (1985), Sick (1993), Stotz *et al.* (1996), Willis (1985c, 1992a).

## 10. Cryptic Antthrush

### *Chamaeza meruloides*

**French:** Tétéma de Such

**German:** Blasskehl-Ameisendrossel

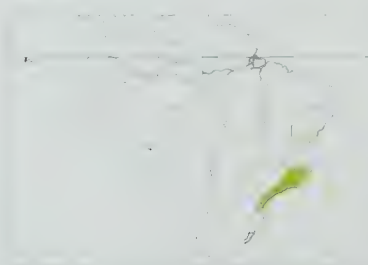
**Spanish:** Tovacá Cripto

**Other common names:** Such's Antthrush

**Taxonomy.** *Chamaeza meruloides* Vigors, 1825, Brazil.

Was long confused with *C. ruficauda*, but differs vocally. Monotypic.

**Distribution.** SE Brazil in Bahia and from E Minas Gerais and W Espírito Santo S to NE Santa Catarina.



**Descriptive notes.** 19-19.5 cm; 65.7-76.7 g. Adult has forecrown reddish-brown, crown medium brown, lores white; white postocular streak, white patch on side of neck; upperparts mostly olivaceous brown, tail medium brown with indistinct subterminal black band, narrowly tipped buff; throat white or buff, sometimes a few black spots along edge; rest of underparts pale buffish-white, deepest buff on centre of breast, sides streaked black, crissum deep buff with few or no black marks; iris reddish-brown; bill dusky brown; tarsus dusky brown. Juvenile not described. **VOICE.** Song 20-40 seconds long, a gradually rising (1.2-1.8

kHz) series of hollow notes at even pace (7 per second), slowly and gradually increasing in volume and pitch, then, after slight lowering of pace (6 per second), remaining level; resembles song of *C. turdina* but faster. Call a short "quick", similar to that of *C. campanisona* but slightly higher-pitched (2-4 kHz).

**Habitat.** Humid montane forest and forest borders. Mostly at 200-1500 m; down to near sea-level in SE São Paulo, and between *C. campanisona* and *C. ruficauda* in areas of range overlap.

**Food and Feeding.** Details of diet not documented; thought to be much as for *C. ruficauda*. Walks on forest floor; behaviour much as that of *C. ruficauda*.

**Breeding.** No information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Atlantic Forest Lowlands EBA. Uncommon. Occurs in Serra dos Órgãos and Itatiaia National Parks, in Serra do Mar State Park, in Augusto Ruschi Biological Reserve, in Alto Ribeira, Intervales and Carlos Botelho State Parks, and in Caraça Natural Park.

**Bibliography.** Aleixo & Galetti (1997), Buzzetti (2000), Cordeiro (2001), Ferreira de Vasconcelos & Melo-Júnior (2001), Goerck (1999a), Gonzaga *et al.* (1995), Guix *et al.* (1992), Pacheco & Laps (2001), Raposo & Teixeira (1992, 1993), Ridgely & Tudor (1994), Stotz *et al.* (1996), Teixeira & Raposo (1993), Venturini *et al.* (2001), Willis (1992a).

## 11. Schwartz's Antthrush

### *Chamaeza turdina*

**French:** Tétéma festonné

**Spanish:** Tovacá Turdino

**German:** Nördliche Rostschwanz-Ameisendrossel

**Other common names:** Scalloped Antthrush

**Taxonomy.** *Chamaeza turdina* Cabanis and Heine, 1859, Bogotá, Colombia.

Formerly treated as conspecific with *C. ruficauda*, but differs in voice and in ventral plumage pattern and has geographically disjunct range. Two subspecies recognized.

**Subspecies and Distribution.**

*C. t. chionogaster* Hellmayr, 1906 - N Venezuela W of Yaracuy Depression in Aroa Mts (E Lara E to SE Falcon) and coastal range from N Aragua to Distrito Federal.

*C. t. turdina* (Cabanis & Heine, 1859) - Colombia in upper Magdalena Valley and middle Cauca Valley.



**Descriptive notes.** 19-19.5 cm. Adult has white lores, rather short white postocular streak, white patch on side of neck; upperparts medium olive-brown, crown and rump slightly more rufescent, tail dusky brown; throat white with fine black specks sometimes forming narrow malar stripe; breast and belly white with little or no buff wash, heavily scalloped with blackish, flanks washed olive-brown, crissum white with fine black bars; iris reddish-brown; bill dusky, base of lower mandible reddish-brown; tarsus dusky brown. Juvenile undescribed. Race *chionogaster* resembles nominate, but underparts even paler, heavier scalloping on lower throat and breast, tail narrowly tipped pale buff. **VOICE.** Song 10-20 seconds long, a gradually rising (1.2-1.6 kHz) series of hollow notes at even pace (5 per second), slowly increasing in volume and pitch, then, after slight lowering of pace (4 per second), remaining level, or sometimes falling slightly at very end, very like song of *C. meruloides* but faster; excited song may be longer (up to 50 seconds), begin lower (1.0 kHz) and end higher (1.7 kHz), and with higher pace (up to 7 notes per second). Call a short "quick", similar to calls of *C. campanisona* and *C. meruloides* but slightly lower-pitched (1.92 kHz) and with well-defined top pitch, and usually in series of 2 in rapid succession; at times 3-noted and running into gurgling, 4-5-second falling series of c. 15 notes (to 1.4 kHz).

**Habitat.** Humid to wet, mossy montane forest and forest borders. Mostly at 1400-2600 m; mainly 900-1700 m on N flank of coastal mountains of Venezuela, above *C. campanisona* in area of range overlap.

**Food and Feeding.** Dietary details not documented, but thought to be much as for *C. ruficauda*. Walks and runs slowly on ground, as *C. ruficauda*.

**Breeding.** Breeds in May-Aug in coastal Venezuela; birds with enlarged gonads in May in Colombia (S Huila) and in May-Jun in Venezuela (Rancho Grande). No other details available.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Cordillera de la Costa Central EBA and Colombian Inter-Andean Slopes EBA. Fairly common within both parts of its small range. In coastal mountains of Venezuela found in El Ávila, Macarao, Henri Pittier and San Esteban National Parks, and Pico Codazzi Natural Monument; and in Aroa Mts found in Yurubi National Park. In Colombia, occurs in Cordillera de los Picachos and Cueva de los Guácharos National Parks.

**Bibliography.** Cory & Hellmayr (1924), Fjeldsá & Krabbe (1990), Hilty (1985, 2003a), Hilty & Brown (1986), Meyer de Schauensee & Phelps (1978), Ridgely & Tudor (1994), Rodner *et al.* (2000), Salaman *et al.* (1999), Schäfer (2002), Schäfer & Phelps (1954), Stotz *et al.* (1996), Wetmore (1939), Willis (1992a).

## 12. Barred Antthrush

### *Chamaeza mollissima*

**French:** Tétéma barré

**German:** Bindenbrust-Ameisendrossel

**Spanish:** Tovacá Barrado

**Taxonomy.** *Chamaeza mollissima* P. L. Selater, 1855, Santa Fe de Bogotá, Colombia.

Birds from Cordillera de Colán (N Peru) slightly intermediate in plumage between nominate and race *yungae*. Two subspecies recognized.

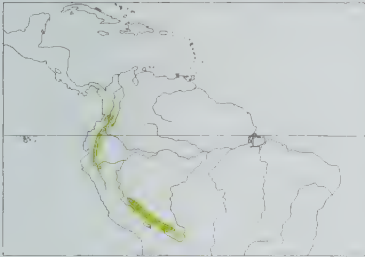
**Subspecies and Distribution.**

*C. m. mollissima* P. L. Selater, 1855 - Colombia in upper Cauca Valley and upper Magdalena Valley, and S on E slope of Andes (from E Nariño, possibly from Meta) to N Peru (N of R Marañón, also just S of there on Cordillera de Colán).

*C. m. yungae* Carriker, 1935 - from SE Peru (Vilcabamba Mts, in Cuzco) to C Bolivia (Yungas of Cochabamba).

**Descriptive notes.** 19-20.5 cm; two males 69 g and 80 g, three females 72-77 g. Adult has whitish lores, postocular streak narrowly barred black and white, black auriculars with some white barring; crown, upperparts and tail chestnut to dark brown, slightly more rufescent on rump and uppertail-coverts; stripe below eye chestnut, throat narrowly barred black and white; underparts dark brown to black, narrowly barred white or buff, lower flanks brown; iris dark brown; bill black, base of lower mandible dark brown; tarsus grey-brown. Juvenile undescribed. Race *yungae* is darker than nominate, has pale bars below slightly broken in feather centres (rather than of uniform width), creating slightly spotted appearance. **VOICE.** Song 6-30 seconds long (longest at high excitement), a series of similar notes at even pace of 6-7 per second, increasing steadily in volume and in pitch





(from c. 1.4 to c. 1.9 kHz), increasing variably throughout song or through first half and then levelling, sometimes pace slowing and pitch slightly lowering over final few seconds; much like song of *C. turdina* and *C. meruloides* but faster, and beginning at higher pitch. Calls include 3-noted, rapid “weeweewit” at c. 2.2 kHz; also squeaky “wickwick, wock” during fights.

**Habitat.** Undisturbed cloudforest and humid-wet montane forest, in dense undergrowth with fallen trees covered in mosses and lichens; at 1800–3100 m.

**Food and Feeding.** Few data on diet; one stomach held small seeds. Alone or in pairs, very secretive. Walks and runs on forest floor, pumping tail, which usually held cocked.

**Breeding.** Specimen changing from juvenile to immature plumage in Nov in SE Peru (Puno). Sings from ground or slightly elevated perch. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Very local; rare in Peru. Generally very rare to rare in Ecuador, but fairly common in Gran Sumaco National Park. Occurs in several other protected areas, e.g. Podocarpus National Park, Ecuador, and Machu Picchu Historical Sanctuary, Peru.

**Bibliography.** Barnes *et al.* (1997), Butler (1979), Cory & Hellmayr (1924), Davies *et al.* (1994), Fjeldså & Krabbe (1990), Hilty (1985), Hilty & Brown (1986), Kirwan & Hornbuckle (1997c), Krabbe *et al.* (1997), Meyer de Schauensee (1982), Negret (2001), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Pearman (1995), Pfeifer *et al.* (2001), Remsen (1985), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Stotz *et al.* (1996), Taylor (1995), Walker (2001).

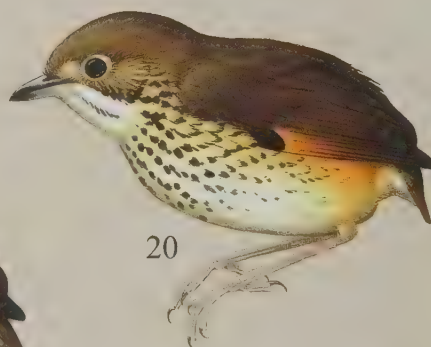
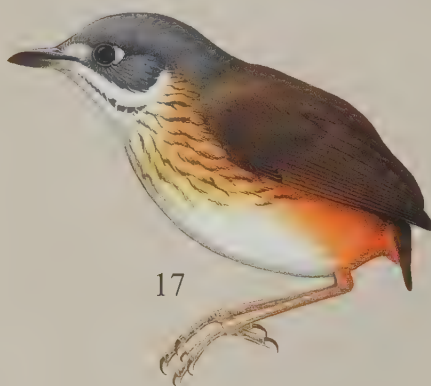


PLATE 71

inches 3  
cm 8



15



22



ssp simplex



## Genus *HYLOPEZUS* Ridgway, 1909

### 13. Spotted Antpitta

#### *Hylopezus macularius*

**French:** Grallaire tachetée **German:** Östliche Brillennameisenpitta **Spanish:** Tororoi Moteado

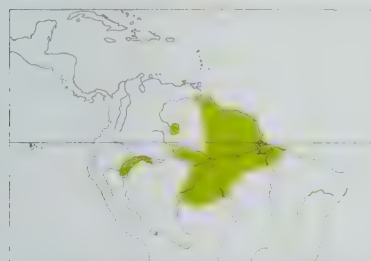
**Taxonomy.** *Pitta macularia* Temminck, 1830, Brazil; error = Cayenne.

Formerly considered conspecific with *H. auricularis*, but differs distinctly in plumage, voice and habitat. All three races differ distinctly in voice, suggesting that they should perhaps be treated as full species. Three subspecies recognized.

#### **Subspecies and Distribution.**

*H. m. macularius* (Temminck, 1830) - NE Venezuela (Sierra de Imataca), the Guianas, and N Brazil E at least from Manaus and S of R Amazon, between R Xingú and R Tocantins (Caxiuanã).

*H. m. diversus* (J. T. Zimmer, 1934) - S Venezuela (region around Mt Duida, upper R Orinoco and Caño Casiquiare), SE Colombia (Loretoyacu, in extreme SE Amazonas), and NE Peru N of R Amazon (Iquitos, Puerto Indiana) and also S of R Marañón and W of R Ucayali (Pacaya-Samiria). *H. m. paraensis* (Sneath, 1910) - Brazil along right bank of R Negro (Tomar), on N bank of R Solimões (Codajás) and S of R Amazon, from left bank of R Madeira E to Belém and S to Rondônia.



**Descriptive notes.** 14 cm; two males 43 g and 47 g, three females 47-53 g, 34 unsexed (*macularius*) average 42-3 g. Adult has grey or olive-grey crown and nape, buff lores, ochraceous eyering, olive auriculars streaked black and buff; rest of upperparts olive-brown, wing-coverts tipped tawny or buff, forming faint wingbars, primary coverts black, contrasting with small, well-defined small tawny patch on base of primaries (except two outermost), remainder of primaries olive-brown; throat white, malar stripe black; breast white, washed with buff and with short black streaks, belly clear white, flanks and crissum ochraceous buff; iris

dark brown; upper mandible black, lower pink with black tip; tarsus pinkish-brown. Juvenile undescribed. Race *paraensis* has fine buff streaks on back, paler buff flanks; *diversus* is more brownish above than latter, with less noticeable shaft streaks on mantle. **VOICE.** Song of *macularius* c. 2-5 seconds long, given at intervals of 7-10 seconds, an evenly paced series of 6 notes, first, second and fourth at c. 1 kHz, rest slightly higher, "whoa-whoa-wok-whoa-wok-wok"; song presumed to be of *diversus* c. 1-8 seconds long, at intervals of 8-11 seconds, an evenly paced series of 6 notes, first 4 at c. 1 kHz, final 2 at c. 0-8 kHz, "hoor-hoor-hoor-ho-ho"; song of *paraensis* c. 3 seconds long, at intervals of 10-20 seconds, a somewhat decelerating series of 5-6 similar notes at c. 0-8 kHz, sometimes falling slightly in pitch.

**Habitat.** Floor and dense undergrowth of forest, e.g. around treefalls and along streams in humid *terra firme* forest, sometimes in more open understorey. Below 500 m.

**Food and Feeding.** One stomach held "insects". Alone, less often in pairs. Hops or runs on the ground, flicking aside leaves.

**Breeding.** Eggs in Apr in French Guiana, and female ready to lay in Jun in Surinam. One nest described, a shallow, very rudimentary cup of twigs and dead leaves resting on a few rootlets, placed 75 cm above ground atop a live horizontal leaf of a palm (*Astrocaryum paramaca*). Clutch 2 eggs, 25.3-25.4 × 19.4-19.5 mm.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon; uncommon and local in Peru. Nominant race occurs in Imataca Forest Reserve and El Dorado, in Venezuela, and in Brownsberg Nature Park and presumably other protected areas in Surinam; both it and *paraensis* are likely to occur in several protected areas in Brazil; *diversus* is found in Pacaya-Samiria National Reserve, in Peru, and in Amacayacu National Park, in SE Colombia.

**Bibliography.** Borges *et al.* (2001), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Friedmann (1948), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Majer (1998), Meyer de Schauensee (1982), Meyer de Schauensee & Phelps (1978), Peres & Whittaker (1991), Pinto (1978), Ridgely & Tudor (1994), Rodner *et al.* (2000), Ruschi (1979), Snyder (1966), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Stouffer & Bierregaard (1995), Stratford & Stouffer (1999), Thiollay & Jullien (1998), Tostain (1986b), Tostain *et al.* (1992), Zimmer, J.T. (1934a), Zimmer, K.J., Parker *et al.* (1997).

### 14. Masked Antpitta

#### *Hylopezus auricularis*

**French:** Grallaire oreillard **Spanish:** Tororoi Enmascarado  
**German:** Südliche Brillennameisenpitta

**Taxonomy.** *Grallaria auricularis* Gyldenstolpe, 1941, Victoria, at confluence of Río Madre de Dios and Río Beni, district of Madre de Dios, Bolivia.

Formerly treated as conspecific with *H. macularius*, but differs distinctly in plumage, voice and habitat. Monotypic.

**Distribution.** N Bolivia in SE Pando and N Beni.

**Descriptive notes.** 14 cm; one male 43 g, one female 38 g. Adult has grey crown and nape, white lores, dark reddish-brown eyering and auriculars; rest of upperparts and tail olive-brown, primaries edged tawny; throat white, malar stripe dusky; breast white, washed with buff and streaked with black and dusky brown, belly clear white, flanks and crissum buff; iris dark brown; upper mandible black, lower ivory-coloured with horn-coloured base; tarsus whitish. Juvenile undescribed. **VOICE.** Song a 3-second series of c. 40 short notes at steady pace and descending evenly from c. 1.5 to 1.2 kHz. Calls at dusk include quick succession of 2-3 melodious notes at c. 2 kHz followed by shorter note at c. 1.5 kHz, and single whistle at c. 2 kHz.



Beni; beside R Beni near Riberaltá, in Beni, seen frequently in 1994 and a specimen collected in 1995. Not known to occur in any protected areas. Adaptable, and exhibits tolerance of, or perhaps even preference for, disturbed habitats. Probably not seriously threatened at present, but its precise distribution and ecological requirements are very poorly known. Proposed conservation actions include field surveys of all suitable habitats in N Bolivia, and research to determine its ecology. **Bibliography.** Gyldenstolpe (1941b, 1945b), Majer (1998, 1999), Meyer de Schauensee (1982), Remsen & Traylor (1989), Ridgely & Tudor (1994), Sagot (1998a), Stattersfield & Capper (2000).

### 15. Streak-chested Antpitta

#### *Hylopezus perspicillatus*

**French:** Grallaire à lunettes **Spanish:** Tororoi de Anteojos  
**German:** Westliche Brillennameisenpitta

**Other common names:** Spectacled Antpitta; Lawrence's Antpitta (*perspicillatus*), Lizano's Antpitta (*lizanoi*), Talamanca Antpitta (*intermedius*)

**Taxonomy.** *Grallaria perspicillata* Lawrence, 1861, Isthmus of Panama.

Five subspecies recognized.

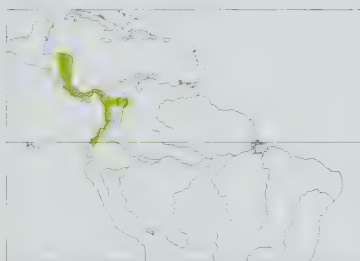
#### **Subspecies and Distribution.**

*H. p. intermedius* (Ridgway, 1884) - Caribbean slope from E Honduras S to W Panama.

*H. p. lizanoi* (Cherrie, 1891) - Pacific slope in S Costa Rica (formerly E to W Chiriquí, in Panama). *H. p. perspicillatus* (Lawrence, 1861) - Panama (from Veraguas and Coclé) E to NW Colombia (N Chocó).

*H. p. pallidior* Todd, 1919 - Colombia in valleys of upper R Sinú, lower R Cauca and middle R Magdalena.

*H. p. periophthalmicus* (Salvadori & Festa, 1898) - Pacific slope from W Colombia (Baudo Mts, in Chocó) S to NW Ecuador.



**Descriptive notes.** 12.5 cm (*lizanoi*) to 14 cm; one male 39 g, one female 41 (both *periophthalmicus*), one unsexed (*perspicillatus*) 37 g. Adult has crown and nape grey, lores and prominent eyering buff; back and rump olive-brown, centre of back with prominent buff streaks, wing-coverts brown with prominent buff apical spots and edges to alula; outermost primaries edged with rufescent brown, paler bases forming small patch, inner remiges brown or olive-brown; tail rufescent brown; black malar streak, white throat; breast and flanks streaked with black, buff wash across breast, pale buff flanks and crissum; iris dark

brown; upper mandible black, lower whitish with black tip; tarsus light pinkish-grey. Juvenile undescribed. Races vary significantly: *intermedius* has lores and eyering ochraceous, upper back washed with grey, edges of back with few thin streaks or unmarked, flanks and crissum pale ochraceous; *lizanoi* resembles nominate, but with back plain or only lightly streaked; *pallidior* has crown and nape grey-brown, outer primaries tawny-brown with rich buff wing patch; *periophthalmicus* has crown and nape dark brown, lores and eyering ochraceous, few or no streaks on back. **VOICE.** Song by male only, 2.3-2.4 seconds long, a series of 7-9 whistled notes, second loudest, first lowest (c. 1.7 kHz), the rest at c. 1-8 kHz, gradually falling slightly in pitch and volume. Alarm, by both sexes, a 2.5 kHz whistled "keewu", immediately followed by decelerating rattle (c. 2 kHz) 2-3 seconds long.

**Habitat.** Floor and lower undergrowth of humid forest, preferring more open habitat than congeners. Lowlands to 900 m, occasionally to 1200 m.

**Food and Feeding.** Details of diet not documented; thought to be mostly arthropods. Solitary. Hops, patters and runs on ground or logs, making sudden stops to look and listen towards ground, or to flick leaves aside with the bill. Sometimes at ant swarms. When surprised, flicks wings and may fly to low perch, rarely as high as 10 m up, before hopping or flying back to ground, then usually running away.

**Breeding.** Eggs found in Apr, Jun and Aug in Costa Rica, and in Jul in Panama; birds in breeding condition in Feb-May in NW Colombia. Male sings from perch c. 2 m from ground, rarely higher (to 9 m), often while rocking from side to side. Nest an untidy, loosely made platform of coarse twigs, petioles and large dead leaves, with shallow concavity scantily lined with dark fibrous roots (little more than lining upon an accumulation of fallen leaves), placed 0.7-1.5 m above ground in undergrowth of heavy forest or in vine tangles; occasionally uses abandoned thin-walled cup-nest of other species, the nest being altered a little by addition of slight lining above some small dead leaves in the bottom. Clutch 2 eggs, 25.4-27 × 20.2-1.4 mm; incubation by both sexes, in long sessions (up to nearly 5 hours), at night apparently only by female; male sometimes sings for long periods from nest while incubating.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Generally uncommon; fairly common below 350 m in wettest parts of NW Ecuador. Extinct on Barro Colorado I (Panama), where formerly fairly common; last seen there in 1971. Occurs in some protected areas, e.g. in lower parts of Cotacachi-Cayapas Ecological Reserve, in Ecuador.



**Bibliography** Anon. (1998a), Blake & Loiselle (2000, 2001), Burton (1975), Butler (1979), Cody (2000), Cory & Hellmayr (1924), Eisenmann (1952), Gillespie (2001), Granizo (2002), Haffer (1975), Hilty & Brown (1986), Ridgely & Greenfield (2001), Ridgely & Gwyne (1989), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Ridgway (1911), Robbins *et al.* (1985), Rodner *et al.* (2000), Salaman (1994), Schönwetter (1967), Skutch (1969c, 1981), Slud (1964), Stiles (1985), Stiles & Skutch (1989), Stiles *et al.* (1999), Stotz *et al.* (1996), Taylor (1995), Wetmore (1972), Wiedenfeld (1982), Willis (1980), Willis & Eisenmann (1979).

## 16. Thicket Antpitta

### *Hylopezus dives*

**French:** Grallaire buissonnière

**Spanish:** Tororoi Ventricanela Colombiano

**German:** Orangeflanken-Ameisenpitta

**Other common names:** Fulvous-bellied/Dives Antpitta; Flammulated Antpitta (*flammulatus*)

**Taxonomy.** *Grallaria dives* Salvin, 1865, Tucuriquí, Costa Rica.

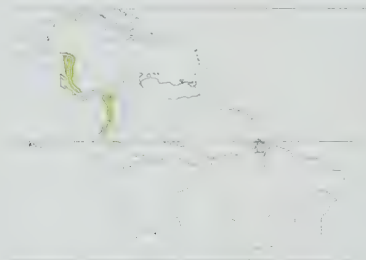
Formerly considered conspecific with *H. fulviventris*, but differs distinctly in voice and plumage. Three subspecies recognized.

**Subspecies and Distribution.**

*H. d. dives* (Salvin, 1865) - Caribbean slope from E Honduras S to Costa Rica.

*H. d. flammulatus* Griscom, 1928 - NW Panama (W & C Bocas del Toro).

*H. d. barbacoae* Chapman, 1914 - from E Panama (E Darién) S along Pacific slope of Colombia (S to W Nariño).



**Descriptive notes.** 13-14 cm; one unsexed 44 g. Adult has dark grey crown and nape, buffy lores and narrow eyering, grey-brown auriculars, buffy moustache; upperparts and tail dark olive-brown, a few very narrow pale buff shaft streaks on upper back; wings dark olive-brown, brightest on edge of primaries; throat and centre of belly white, breast and sides ochraceous buff and diffusely streaked blackish, flanks and crissum deep orange-rufous; iris dark brown; bill blackish, basal half of lower mandible pale; tarsus pale pinkish-grey. Distinguished from similar *H. fulviventris* by smaller and buffy, rather than white, loreal spot.

lack of white triangle behind eye, paler grey crown, paler auriculars, somewhat finer ventral streaking, deeper orange-rufous flanks. Juvenile undescribed. Race *barbacoae* resembles nominate, but crown darker, and back more olive with fewer shaft streaks; *flammulatus* also very similar, but darker both above and below, chest more heavily flammulated with black. **VOICE.** Song 1.6-2 seconds long, a rapid ascending series of 10-13 clear whistles increasing in volume and ending abruptly, accelerating slightly towards end, first note of double quality, second with slight catch, final 3-4 on same pitch. Alarm a hard, metallic, rolling "trrrrr", weaker than rattle of *H. perspicillatus*.

**Habitat.** Prefers dense, low tangled thickets of shrubs and vines along forest streams, in treefalls, at forest edge, or impenetrable young second growth in small abandoned clearings. Lowlands to 900 m.

**Food and Feeding.** Diet insects and spiders. Forages on the ground and on logs.

**Breeding.** Four birds in breeding condition in Mar-May in NW Colombia. Sings from horizontal branch up to 1.5 m above ground. No other information available.

**Movements.** Sedentary; apparently in territorial pairs throughout year.

**Status and Conservation.** Not globally threatened. Widespread; fairly common to locally common. Apparently favoured by light habitat disturbance. In Costa Rica, occurs in Tortuguero National Park and La Selva Biological Station, probably also in Hitoy Cerere Biological Reserve. In Colombia, occurs in parts of Los Katios and Ensenada de Utria National Parks.

**Bibliography** Anon. (1998a), Blake & Loiselle (2001), Cody (2000), Cooper (1997), Cory & Hellmayr (1924), Haffer (1975), Hilty & Brown (1986), Howell, S.N.G. & Webb (1995a), Howell, T.R. (1957), Monroe (1968), Ridgely & Gwyne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robbins *et al.* (1985), Rodner *et al.* (2000), Slud (1960, 1964), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Wetmore (1972).

## 17. White-lored Antpitta

### *Hylopezus fulviventris*

**French:** Grallaire à ventre fauve

**Spanish:** Tororoi Ventricanela Ecuatoriano

**German:** Weißwangen-Ameisenpitta

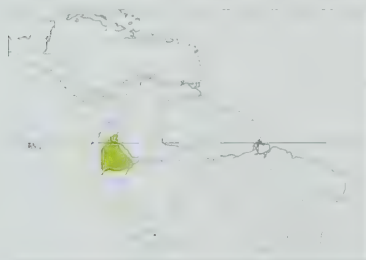
**Taxonomy.** *Grallaria fulviventris* P. L. Selater, 1858, Rio Napo, Ecuador.

Formerly considered conspecific with *H. dives*, but differs distinctly in voice and plumage. Possibly conspecific with vocally similar *H. berlepschi*. Two subspecies recognized.

**Subspecies and Distribution.**

*H. f. caquetae* Chapman, 1923 - W Caquetá, in SE Colombia.

*H. f. fulviventris* (P. L. Selater, 1858) - E Ecuador and N Peru (S to lower R Cenepa and Iquitos).



**Descriptive notes.** 14.5 cm; two males 47.5 g and 57 g, one female 43.7 g. Adult has prominent white loreal spot and white triangular spot behind eye; crown, nape and side of head dark slaty, rest of upperparts dark olive-brown; lower edge of auriculars to throat white; breast and sides buffy ochraceous, coarsely streaked with dusky, belly white, flanks and crissum orange-rufous; iris dark brown; bill blackish, base of lower mandible pale; tarsus flesh-coloured. Juvenile undescribed. Race *caquetae* is similar, but browner above, crown paler grey, lores tipped buff. **VOICE.** Song 2-3 seconds long, at intervals of 5-10 seconds, an evenly

paced series of 4-6 similar downslurred "cucock" notes at 0.8-0.9 kHz. Alarm a rapid, hollow, accelerating roll with introductory high note, "e-o-o-o-o-o-o-oh", resembles song of Cocha Antshrike (*Thamophilus praecox*) but considerably lower-pitched.

**Habitat** Floor and lower parts of very dense undergrowth at forest edge (both *várzea* and *terra firme*), in riparian forest, and in overgrown clearings. Below 600 m.

**Food and Feeding.** Diet not documented. Usually alone, walks, runs, or hops with springy bounds over forest floor or on logs.

**Breeding.** Song given persistently, even throughout heat of day, from perch within 2 m of ground. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon; rare in Peru. Occurs locally in Cuyabeno Reserve and Yasuni National Park, in Ecuador; recorded at ExplorNapó Lodge, in Peru. Apparently favoured by light habitat disturbance.

**Bibliography** Best *et al.* (1997), Butler (1979), Cory & Hellmayr (1924), Hilty & Brown (1986), Krabbe, Agro *et al.* (1999), Meyer de Schauensee (1982), Parker *et al.* (1982), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Stotz *et al.* (1996), Taylor (1995), Willis (1988b).

## 18. Amazonian Antpitta

### *Hylopezus berlepschi*

**French:** Grallaire d'Amazonie

**German:** Olivmantel-Ameisenpitta

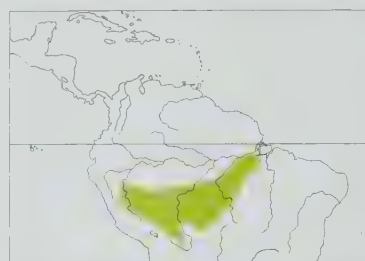
**Spanish:** Tororoi Amazónico

**Taxonomy.** *Grallaria berlepschi* Hellmayr, 1903, Engenho do Gama, Rio Guaporé, Mato Grosso, Brazil. Possibly conspecific with vocally similar *H. fulviventris*. Racial affiliation of birds from SE Peru uncertain; currently placed in nominate race, but at least some may belong with *yessupi*. Two subspecies recognized.

**Subspecies and Distribution.**

*H. b. yessupi* (Carriker, 1930) - E & C Peru (S from C Loreto) and immediately adjacent W Brazil.

*H. b. berlepschi* (Hellmayr, 1903) - S Amazonian Brazil from upper R Purús NE to Pará (between lower R Xingú and lower R Tapajós), SW to SE Peru, NC Bolivia and N Mato Grosso.



**Descriptive notes.** 14.5 cm; male 46-54 g, female 36-48 g. Adult has buffy loreal spot; entire upperparts olive-brown, outer webs of primaries paler, olive-buff; throat to below auriculars white, breast and sides buffy ochraceous, coarsely streaked dusky, belly white, flanks and crissum orange-rufous; iris brown; exposed orbital skin pinkish-red; upper mandible dusky grey, lower pinkish-white with dusky tip; tarsus bright pink. Juvenile undescribed. Race *yessupi* is scarcely distinguishable from nominate, but said to be slightly darker (brownier) above and slightly deeper buff below. **VOICE.** Song 2-3 seconds long, given at intervals of 5-10 seconds, an evenly paced series of 3-4 (rarely, 2) similar downslurred "cucock" notes at 0.8-0.9 kHz; differs from song of *H. fulviventris* only in being slower with on average fewer notes. Call a 1.6-second rattle of 14-16 notes at 0.8 kHz.

**Habitat.** Floor and lower part of very dense undergrowth at forest edge and in overgrown clearings. Below 500 m.

**Food and Feeding.** One stomach held "insects". Usually alone. Walks, runs and hops on forest floor and logs; behaviour similar to *H. fulviventris* and *H. dives*.

**Breeding.** No information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon; locally fairly common; rare in Peru. Occurs in several protected areas, e.g. Noel Kempff Mercado National Park, Bolivia; recorded regularly at Amazonia Lodge and Pantiacolla Lodge, in Peru. Apparently favoured by light habitat disturbance.

**Bibliography** Allen (1995), Angehr & Aucca (1997), Brace *et al.* (1997), Cory & Hellmayr (1924), Donahue (1994), Dubs (1992), Graves & Zusi (1990), Gyldenstolpe (1951), Meyer de Schauensee (1982), Oren & Parker (1997), Parker *et al.* (1982), Pinto (1978), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Tudor (1994), Robinson & Terborgh (1997), Ruschi (1979), da Silva (1996), Stotz *et al.* (1996), Terborgh *et al.* (1984), Zimmer, K.J., Parker *et al.* (1997).

## 19. White-browed Antpitta

### *Hylopezus ochroleucus*

**French:** Grallaire tegu

**German:** Weißbrauen-Ameisenpitta

**Spanish:** Tororoi Teguá

**Taxonomy.** *Myioturdus ochroleucus* Wied, 1831, Arraial da Conquista, southern Bahia, Brazil.

Was for many years treated as conspecific with *H. nattereri*, despite striking differences in voice, plumage, habitat and distribution. Monotypic.

**Distribution.** Interior E Brazil, locally in W & S Ceará, Piauí, W Pernambuco, Bahia and extreme N Minas Gerais.



**Descriptive notes.** 13.5 cm. Adult has white lores, narrow white postocular streak bordered above with black, pale olive-grey auriculars with white shaft streaks; olive-grey above, greyest on crown, wing-coverts with light buff tips forming two faint bars; primary coverts dusky, contrasting with base of primaries, latter with ochraceous edges forming large pale patch; indistinct dusky malar streak, otherwise most of underparts white, sides and flanks washed with buff, breast and sides prominently streaked and spotted dusky brown or black; iris dark brown, bare orbital skin white; bill blackish, basal half of lower mandible light grey; tarsus pinkish-grey. Juvenile undescribed. **VOICE.** Song 3-4 seconds long, a series of 12-14 notes rising slightly in pitch from c. 2.2 to c. 2.6 kHz, first 4 notes alternating low-high-low-high (initial 2 notes slightly quieter, the following 2 transitional), the last 6-8 (rarely, fewer) notes evenly paced, short, sharply downslurred whistles, final note slightly weaker.

**Habitat** Ground and lower parts of undergrowth of better-developed, lush, vine-rich, semi-deciduous woodland, locally also deciduous woodland, including *caatinga* woodland. In N, most common in semi-humid pockets of woodland in isolated mountains; farther S, somewhat more sparingly in any undisturbed or lightly disturbed woodland with abundant tangled vines in understorey. At 400-950 m.

**Food and Feeding.** Diet not documented. Forages on ground; makes short hops, and probes litter and soil; behaviour much as that of *H. nattereri*. Observed to flick aside leaves.



**Breeding.** Sings from somewhat elevated perch in dense tangled thicket. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Uncommon. There are no reserves in the areas where this species is commonest, in the *mata-de-cipó* (liana) forest, which forms the transition between the arid *caatinga* and the humid Atlantic Forest. In N part of range it occurs in Ubajara, Serra da Capivara and Serra do Araripe National Parks, and Serra Negra Biological Reserve; in far S, in N Minas Gerais, occurs in Cavernas do Peruaçu National Park. Has suffered loss of habitat through deforestation for agriculture, combined with degradation of understorey caused by overgrazing; threats have increased since 1970s, primarily through road-building and associated human colonization of previously remote areas. Although this species still persists in some degraded areas, its future survival is considered by no means secure.

**Bibliography.** dos Anjos & Schuchmann (1997), dos Anjos *et al.* (1997), Collar *et al.* (1994), Cory & Hellmayr (1924), Guix *et al.* (1992), Kirwan *et al.* (2001), Meyer de Schauensee (1982), Olmos (1993), Oniki & Willis (2002), Parrini *et al.* (1999), Pinto (1937, 1978), Ridgely & Tudor (1994), do Rosário (1996), Ruschi (1979), Sergeant & Wall (1996), Sick (1993), Stattersfield & Capper (2000), Stotz *et al.* (1996), Tobias *et al.* (1993), Whitney *et al.* (1995).

## 20. Speckle-breasted Antpitta

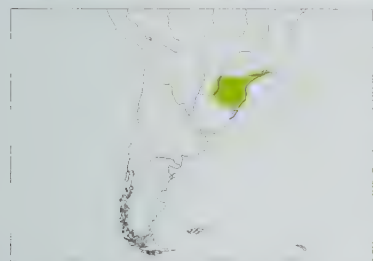
### *Hylopezus nattereri*

**French:** Grallaire de Natterer **German:** Fleckenbauch-Ameisenpitta **Spanish:** Tororoi de Natterer

**Taxonomy.** *Grallaria nattereri* Pinto, 1937. Alto da Serra, São Paulo, Brazil.

Was for many years inexplicably considered conspecific with *H. ochroleucus*, but shows striking differences in voice, plumage, habitat and distribution. Monotypic.

**Distribution.** SE Brazil in S Minas Gerais, and from W Paraná E to W Rio de Janeiro and S to extreme E Paraguay, NE Argentina (Misiones) and N Rio Grande do Sul.



**Descriptive notes.** 13.5 cm; two males 31 g and 33 g. Adult has pale buff lores, whitish moustache; upperparts olive-brown, wings browner; primary coverts dark, contrasting ill-defined relatively small ochraceous speculum on base of primaries; dusky malar streak, white throat and belly centre, pale ochraceous-buff breast, sides and flanks, sides scalloped, breast, upper belly and flanks spotted dusky; iris dark brown, bare orbital skin buffy white; bill blackish, basal half of lower mandible pinkish-grey; tarsus pinkish-grey. Juvenile undescribed.

**VOICE.** Song 2-2.5 seconds long, an evenly paced series of 5-10 (in S) or 8-14 (in N) whistled notes, steadily increasing in amplitude, first few slightly falling, but thereafter rising in pitch from c. 2 to c. 2.5 kHz, notes changing shape through the series (beginning flat, ending downslurred); in S, final note shorter and often quieter than preceding one. Call a 1-second rattle falling from c. 2.7 to c. 2.2 kHz, of 7 short, sharply downslurred notes.

**Habitat.** Ground and lower growth in humid and montane forest, mature secondary woodland, and borders; often in very densely tangled vegetation and bamboo. At 1200-1900 m in N, down to below 300 m in S.

**Food and Feeding.** Dietary details not documented. Primarily terrestrial. Performs short hops, punctuated by abrupt stops to cock head sideways while looking at or listening towards ground; probes leaf litter and soil, sometimes repeatedly for several seconds.

**Breeding.** Sings from perch up to 2 m above ground. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Fairly common in most of range. Fairly common in high parts of Serra do Mar State Park, in Brazil. Found also in Serra dos Órgãos, Itatiaia, Serra da Bocaina, and Aparados da Serra National Parks, Carlos Botelho State Park and Caraça Natural Park, all in Brazil, and in Iguazú National Park, in Argentina; probably also occurs in several other protected areas. Not particularly threatened over most of its montane distribution.

**Bibliography.** Anon. (1996), Belton (1985), Bencke & Kindel (1999), Buzzetti (2000), Canevari *et al.* (1991), Chebez *et al.* (1999), Cordeiro (2001), Ferreira de Vasconcelos & Melo-Júnior (2001), Goerck (1999a), Hayes (1995), Lowen *et al.* (1997), Madroño, Clay *et al.* (1997), Madroño, Robbins & Zyskowski (1997), Narosky & Yzurieta (1993), Parker & Goerck (1997), de la Peña (1988), Pinto (1978), Ridgely & Tudor (1994), Ruschi (1979), Stotz *et al.* (1996), Straneck & Carrizo (1990a), Whitney *et al.* (1995).

## Genus MYRMOTHERA Vieillot, 1816

## 21. Thrush-like Antpitta

### *Myrmothera campanisona*

**French:** Grallaire grand-beffroi **Spanish:** Tororoi Campanero  
**German:** Strichelbrust-Ameisenpitta

**Taxonomy.** *Myrmornis campanisona* Hermann, 1783, Cayenne.

Race *subcanescens* exhibits distinct vocal differences from other races; possibly a separate species. Plumage differences among other races very poorly defined; further study required. Six subspecies recognized.

**Subspecies and Distribution.**

*M. c. modesta* (P. L. Sclater, 1855) - Base of E Andes of Colombia (S from Meta).

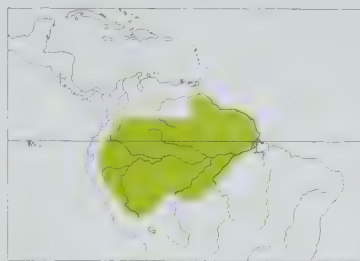
*M. c. dissors* J. T. Zimmer, 1934 - E Colombia in Guainía and Vaupés, adjacent S Venezuela (C & S Amazonas) and NW Brazil (from R Negro S to R Solimões, apparently also S of Amazon on left bank of lower R Madeira).

*M. c. campanisona* (Hermann, 1783) - SE Venezuela, the Guianas, and Brazil N of R Amazon (W at least from R Atabani, probably from R Negro).

*M. c. signata* J. T. Zimmer, 1934 - E Ecuador and NE Peru N of R Amazon.

*M. c. minor* (Taczanowski, 1882) - E Peru (S of R Amazon), adjacent W Brazil (E to R Purús) and extreme NW Bolivia.

*M. c. subcanescens* Todd, 1927 - Brazil S of R Amazon, from R Madeira E to right bank of lower R Tapajós and S to Rondônia.



**Descriptive notes.** 15 cm; male 39.5-54 g, female 42-64 g. Adult has buffy lores, small white patch behind eye; moustachial region mottled brown and white; side of head and upperparts dull rufescent brown; most of underparts white, breast and sides indistinctly streaked brown, flanks olive-brown; iris dark brown; upper mandible black, lower fleshy orange to yellowish with blackish tip and cutting edges; tarsus pinkish-white. Juvenile undescribed. Races *modesta*, *dissors*, *signata* and *minor* are more olive-brown, less rufescent, than nominate, but individual plumage differences inadequately defined; *subcanescens* is rufescent brown

above, but paler than nominate, and with reduced breast streaking, the marks also more greyish or olive, less rufescent. **VOICE.** Song 1-4-2-4 seconds long, given at intervals of 6-14 seconds, a slightly falling series of 5-7 (rarely, 8) similar hollow whistled notes at 0.7-0.8 kHz, first note often weaker and a little lower-pitched than rest; song of *subcanescens* distinctly different, gradually increasing in volume, and rising steadily in pitch from 0.85 to 1.05 kHz. Call 1-1.6 seconds long, a rattle or churr of 14-24 notes at 1-1.1 kHz at intervals of 3-6 seconds (often while flicking wings).

**Habitat.** Forest floor amid thick undergrowth, e.g. along treefalls or streams of humid *terra firme* forest, rarely savanna-forest. Lowlands to 1200 m; in Venezuela below 800 m and in Peru below 700 m.

**Food and Feeding.** Recorded food includes curculionid beetles (*Lamellicornia*), ants (Attnae, Formicidae), grasshoppers (Acrididae) and millipedes (Diplopoda). Alone or in pairs. Hops and sometimes walks on the forest floor, occasionally perching on low branches.

**Breeding.** Breeds during the wet season (Dec-Jan in French Guiana). Nest a shallow cup of tiny twigs, rootlets or hyphae on a platform of dead leaves or twigs, placed less than 1 m above ground in rosette of undergrowth plant (fern, palm, or large herbaceous clump), similar to nest of *Grallaria*. Clutch 2 eggs, 27-28 × 21.5 mm.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Locally fairly common; uncommon in Peru. Generally widespread at low density; distance between nests of two neighbouring pairs in French Guiana was 400 m. Usually not responsive to playback, making survey work sometimes difficult. Occurs in several protected areas.

**Bibliography.** Angehr & Auca (1997), Balchin & Toyne (1998), Barber & Robbins (2002), Borges *et al.* (2001), Butler (1979), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Friedmann (1948), Gyldenstolpe (1951), Haverschmidt & Mees (1994), Hilty (2003a), Hilty & Brown (1986), Krabbe, Agro *et al.* (1999), Mee *et al.* (2002), Meyer de Schauensee & Phelps (1978), Parker & Remsen (1987), Parker *et al.* (1982), Pinto (1978), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Ruschi (1979), Sick (1993), Snyder (1966), Stotz *et al.* (1996), Stratford & Stouffer (1999), Tallman & Tallman (1994), Taylor (1995), Terborgh *et al.* (1984), Tostain & Dujardin (1988), Tostain *et al.* (1992), Willard *et al.* (1991), Zimmer, J.T. (1934a), Zimmer, K.J., Parker *et al.* (1997).

## 22. Tepui Antpitta

### *Myrmothera simplex*

**French:** Grallaire sobre **German:** Olivbauch-Ameisenpitta **Spanish:** Tororoi Flautista  
**Other common names:** Brown-breasted Antpitta

**Taxonomy.** *Grallaria simplex* Salvin & Godman, 1884, Mount Roraima, 5000 feet [c. 1520 m], Venezuela. Four subspecies recognized.

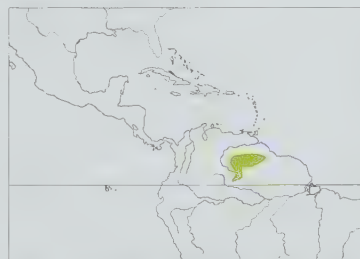
**Subspecies and Distribution.**

*M. s. duidae* Chapman, 1929 - S Venezuela in Amazonas (cerros of Yaví, Duida and Neblina).

*M. s. guaiquinimae* J. T. Zimmer & Phelps, Sr., 1946 - SE Venezuela in C & SE Bolívar (Cerro Guaiquinima and Cerro Pauri-tepui).

*M. s. simplex* (Salvin & Godman, 1884) - Gran Sabana and Mt Roraima, in SE Venezuela (SE Bolívar) and adjacent Guyana.

*M. s. pacaraimae* Phelps, Jr. & Dickerman, 1980 - Pacaraima Mts in S Bolívar and immediately adjacent N Brazil.



**Descriptive notes.** 16 cm; three males 51-85 g, two females 51-8 g and 53 g. Adult has small white postocular spot; side of head and upperparts chestnut-brown, paler on lores; chin and throat white, breast, sides and flanks olivaceous grey or grey washed with olive-brown, centre of belly white, crissum tawny-brown; iris brown; bill black, base of lower mandible flesh-white; tarsus medium grey. Juvenile undescribed. Races differ only little: *duidae* has browner breastband and on flanks; *guaiquinimae* is similar, but breast and flanks more olive, less brown; *pacaraimae* is paler above than other races, with less extensive breastband. **VOICE.** Song 3-3.5 seconds long,

given at intervals of 9-14 seconds, a rising series of 10-11 similar evenly paced, whistled notes at 1-1.2 kHz, volume gradually increasing, first 3-4 notes sometimes falling in pitch.

**Habitat.** Dense rainforest and cloudforest, in thick undergrowth; on summits of tepuis also in more open stunted forest and woodland. At 600-2400 m; in Guyanan sector of Mt Roraima, commonest above 1200 m.

**Food and Feeding.** Diet not recorded. Forages alone. Almost entirely terrestrial. Behaviour much like that of *M. campanisona*, but less shy.

**Breeding.** Single nest recently found, birds incubating in Mar, in Guyana. Nest placed at leaf bases and petioles of *Philodendron linnaei* (Araceae); cup-shaped, made of small sticks with dead leaves at base, lined with smaller sticks and rootlets. Clutch 2 eggs, 26-27 × 20 mm. Incubation by both adults.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Tepuis EBA. Uncommon to fairly common. Occurs in several protected areas, e.g. Canaima National Park (Venezuela). **Bibliography.** Barber & Robbins (2002), Barnett *et al.* (2002), Braun *et al.* (2003), Chapman (1931), Cory & Hellmayr (1924), Gilliard (1941), Hilty (2003a), Mayr & Phelps (1967), Meyer de Schauensee (1982), Meyer de Schauensee & Phelps (1978), Phelps & Dickerman (1980), Pinto (1978), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stotz *et al.* (1996), Willard *et al.* (1991).





PLATE 72

inches 4  
cm 10

## PLATE 72

## Family FORMICARIIDAE (GROUND-ANTBIRDS) SPECIES ACCOUNTS

### Genus *GRALLARIA* Vieillot, 1816

#### 23. Great Antpitta

##### *Grallaria excelsa*

French: Grande Grallaire German: Fahlbauch-Ameisenpitta Spanish: Tororoi Excelso

**Taxonomy** *Grallaria excelsa* Berlepsch, 1893. Montaña Aricagua, Andes of Mérida, Venezuela. Forms a superspecies with *G. gigantea*. Possibly conspecific, or, alternatively, race *lehmanni* of latter should perhaps be placed with present species; further study required. Two subspecies recognized.

##### **Subspecies and Distribution.**

*G. excelsa* Berlepsch, 1893 - Perijá Mts in W Venezuela, possibly extending into adjacent Colombia, also Andes from Lara S to Táchira.

*G. phelpsi* Gilliard, 1939 - coastal mountains of Venezuela in Aragua (Colonia Tovar).

**Descriptive notes.** 24 cm. Adult has lores and eyering whitish, most of crown brown, hindcrown and nape grey; rest of upperparts olive-brown (contrasting with grey hindcrown); throat white; cheeks and most of underparts buff, barred black, with the buff palest, nearly white and forming crescent, just below throat; iris dark brown; upper mandible black, lower pale; tarsus dark grey-brown. Juvenile undescribed. Race *phelpsi* is similar, but greener olive above, forecrown darker, brown extending only to middle of crown, white of throat less extensive, upper breast paler with broader terminal and subterminal bars, bill and tarsus shorter. **Voice.** Song, given at dawn, is a low-

frequency vibrating hollow (700 Hz), on average lasting 4.3 seconds; very similar to song of *G. squamigera*, but differs in slight acceleration and in abrupt end; also similar to voice of Vermiculated Screech-owl (*Otus roraimae*), although latter is softer and slower and ends smoothly.

**Habitat.** Dense cloudforest on highest ridges at 1700-2300 m, especially above 2000 m.

**Food and Feeding.** Diet not recorded. Forages singly in debris on forest floor.

**Breeding.** Breeds in May-Jun, early in rainy season, in coastal Venezuela.

**Movements.** Presumably sedentary.



**Status and Conservation.** **VULNERABLE.** Restricted-range species; present in Colombian East Andes EBA, Cordillera de la Costa Central EBA and Cordillera de Mérida EBA. An extremely poorly known species; appears to be rare and very local. Very few recent records (many reports of this species relate to misidentified *G. squamigera* and *G. haplonota*); only recent records are from Yacambú National Park. Thought to have suffered rapid decline in numbers, and total population probably small or very small. Although some large areas of forest remain in Mérida and Aragua, severe and extensive deforestation has occurred throughout its range, and continuing clearance for agriculture a major threat in Mérida chain; likely to be present in several protected reserves in both regions, but this not confirmed. W population of nominate race possibly already extinct; if it survives, it is nominally protected in the Sierra de Perijá National Park, although active management there appears non-existent. Proposed conservation actions include field surveys in Apr-Nov aimed at extensive recording of the species' vocalizations, and subsequently establishing its current dis-



tribution and ecology; it may possibly be found to be more common, and present in several protected areas, once its song is better known. Thereafter, measures to protect the species need to be established.

**Bibliography.** Ascanio (2003), Collar *et al.* (1994), Cory & Hellmayr (1924), Gilliard (1939), Hilty (2003a), Meyer de Schauensee (1982), Meyer de Schauensee & Phelps (1978), Renjifo *et al.* (1997), Ridgely & Tudor (1994), Rodner *et al.* (2000), Schäfer (2002), Stattersfield & Capper (2000), Stotz *et al.* (1996), Visbal *et al.* (1996).

## 24. Giant Antpitta

### *Grallaria gigantea*

**French:** Grallaire géante

**German:** Riesenameisenpitta

**Spanish:** Tororoi Gigante

**Taxonomy.** *Grallaria gigantea* Lawrence, 1866, Ecuador.

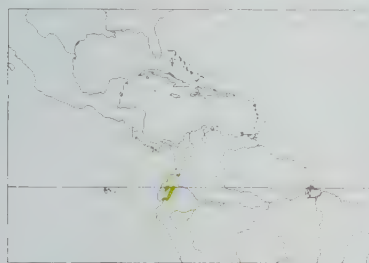
Forms a superspecies with *G. excelsa*. Possibly conspecific, or possibly only race *lehmanni* may be better placed with that species; or, conversely, race *hylodroma* may deserve full species rank; further research required. Three subspecies recognized.

**Subspecies and Distribution.**

*G. g. lehmanni* Wetmore, 1945 - SW Colombia at head of Magdalena Valley.

*G. g. hylodroma* Wetmore, 1945 - SW Colombia (Nariño) and Pacific slope of Andes in Ecuador (Pichincha, Cotopaxi).

*G. g. gigantea* Lawrence, 1866 - E slope of Andes of Ecuador (E Carchi and Napo S to Volcán Tungurahua).



**Descriptive notes.** 24 cm; three males 204-266 g (*gigantea*), one male 218 g, one unsexed 254 g (*hylodroma*). Adult has chestnut forehead, grading into slate-grey on crown and nape; upperparts, wings and tail brownish; side of head and underparts dull rufous, barred blackish, bars heaviest on flanks; iris dark brown; upper mandible blackish, lower dark grey-brown; tarsus grey. Juvenile undescribed. Race *lehmanni* resembles nominate, but back more olive-brown, central underparts even more heavily barred; *hylodroma* is brightest, face rufous-chestnut, above brownish-olive, head and underparts rufous-chestnut, only narrowly barred, central belly and vent unbarred ochraceous. Voice. Song (*hylodroma*) 4-6 (rarely, 7) seconds long, at intervals of 5-15 seconds, a rolling series of 0.6-0.9 kHz notes at even pace of 16-18 per second, gradually increasing in volume and by c. 0.1 kHz in pitch, often with sudden rise in pitch at very end, virtually indistinguishable from song of *G. squamigera* but pace averaging slightly faster; song of *gigantea* longer (8 seconds) and slightly faster (19-20 notes per second).

**Habitat.** Humid and wet primary montane forest, preferring level ground, but occasionally found on steep slopes; sometimes forages in open pasture next to forest, especially just before dawn and at late dusk, but also at other times during foggy weather. At 1200-2600 m, locally to 3000 m.

**Food and Feeding.** Food items recorded include a large beetle, large grubs, slugs, and giant earthworms (*Rhynodrylus*) and other large earthworms. Giant earthworms quickly cut into pieces c. 8 cm long, some of which are devoured. Terrestrial. Hops on forest floor, then pauses for long intervals. Pounds heavy beak into the soil, or quickly grabs food items from surface.

**Breeding.** Natural (unprovoked) song recorded Oct-Jan in NW Ecuador, Oct and Mar in E Ecuador. Song given just before dawn and at late dusk, delivered from a perch 2-8 m above the ground; territories in NW Ecuador (*hylodroma*) estimated at c. 1-1.5 ha. No other information available.

**Movements.** Presumably sedentary.

**Status and Conservation.** ENDANGERED. Restricted-range species: present in Northern Central Andes EBA and Southern Central Andes EBA. Rare and local in most of its range; fairly common in Pichincha and Cotopaxi provinces, in NW Ecuador. In Ecuador, occurs in Mindo-Nambillo Cloudforest Reserve as well as some smaller reserves (Bellavista, La Florida, Paschoa), and probably also occurs very locally in Cayambe-Coca Ecological Reserve, and Gran Sumaco and Sangay National Parks; in Colombia, has been recorded in Puracé National Park and La Planada Nature Reserve. Its conservation status should perhaps, therefore, be revised to Vulnerable. Nevertheless, has almost certainly declined in both range and numbers owing to habitat loss and degradation. Throughout the species' range, cloudforest has been extensively cleared through logging, and converted to agriculture and narcotics plantations; in SW Colombia, lower and middle parts of Andes almost completely given over to agriculture since at least early 20th century. Race *lehmanni* may well be extinct; even if it still survives on higher slopes, destruction of forest is continuing there; collected in 1941 in Puracé National Park, and could still be present. Race *hylodroma* is restricted to a few localities on W slope of Andes in Ecuador; 1988 and 1989 records (presumably of this race) from La Planada Nature Reserve, in Nariño, SW Colombia, were encouraging, but searches in 1990s failed to find it. As forests on E slope in Ecuador have suffered less damage, nominate race is more secure. Surveys required in order

to determine if the species survives at historical sites and to locate additional sites; estimates of population densities at known sites urgently needed.

**Bibliography.** Allen (1998), Butler (1979), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), Ejeldsá & Krabbe (1990), Freile (2000), Granizo (2002), Granizo *et al.* (1997), Hilty (1985), Hilty & Brown (1986), Kirwan & Marlow (1996), Krabbe & Coopmans (2000), Krabbe *et al.* (1994), Negret (2001), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), de Soye *et al.* (1997), Stattersfield & Capper (2000), Stotz *et al.* (1996), Taylor (1995), Wege & Long (1995), Welford (2000), Welford & Nunery (2001).

## 25. Undulated Antpitta

### *Grallaria squamigera*

**French:** Grallaire ondée

**German:** Ockerbauch-Ameisenpitta

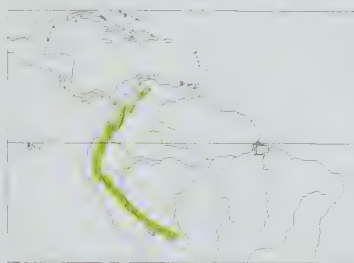
**Spanish:** Tororoi Ondoso

**Taxonomy.** *Grallaria squamigera* Prévost and Des Murs, 1846, no locality = Bogotá, Colombia. Birds from Cordillera de Cutucú (SE Ecuador), though tentatively included with similarly plumaged Peruvian race *canicauda*, are isolated from nearest population of latter by an area occupied by nominate race, and probably represent an independent lineage; further study needed. Two subspecies recognized.

**Subspecies and Distribution.**

*G. s. squamigera* Prévost & Des Murs, 1846 - Andes from W Venezuela (Mérida) and all three ranges of Colombia S to S Ecuador.

*G. s. canicauda* Chapman, 1926 - SE Ecuador (Cordillera de Cutucú); also Peru in Cajamarca (Chira) and from S & E of R Marañón to C Bolivia (Cochabamba).



**Descriptive notes.** 20-23 cm; 131-6 g (*squamigera*), male 116-174 g, female 105-166 g (*canicauda*). Adult has crown and nape slaty grey, lores buffy white; remainder of upperparts slaty brown, scaled with black, and variably tinged with olivaceous; throat usually white, sometimes ochraceous on darkest individuals, black malar stripe; side of head and underparts variable, from light buff to orange-buff or deep ochraceous, barred or scaled with blackish-brown (except central belly); vent brighter, ochraceous orange; iris brown; upper mandible dark grey, lower pinkish-grey with dusky grey tip; tarsus pinkish blue-grey.

Juvenile undescribed. Race *canicauda* is greyer above, has somewhat whiter lores. Voice. Song 4-5 (rarely, 6) seconds long, at intervals of 4-15 seconds, a rolling series of 0.6-0.8 kHz notes at even pace of 14-16 per second, gradually increasing in volume and pitch, often with slight jump and fall in pitch at very end. Call rarely heard, a hollow "rrhooh-rrhooh-rrhooh".

**Habitat.** Floor of humid and wet montane forest, humid mossy *Polylepis* woodland, thickets of *Chusquea* bamboo or *Neurolepis* cane, and second growth; also in very disturbed semi-humid shrubbery and second growth in W and inter-Andean Ecuador. At dawn and dusk, and during foggy weather, ventures into pasture and other open areas next to forest. Mostly at 2600-3800 m, occasionally down to 1830 m.

**Food and Feeding.** Two stomachs held insects. Forages alone. Mainly terrestrial. Hops and pauses on or near the ground, searching with head slightly tilted, darting swiftly to snatch prey from ground. After swallowing food, often puffs feathers, then flicks both wings simultaneously while bobbing on its long legs once or twice, then takes another few hops.

**Breeding.** A specimen in breeding condition in Aug in Colombia (N end of W Andes); fledglings in Nov in NW Ecuador, in Dec in Bolivia (La Paz) and in Mar in SC Peru (Apurímac); juveniles seen in Jun in Venezuela; song mainly in Nov-Feb in NW Ecuador. Sings only during breeding season, mainly at pre-dawn and late dusk, from concealed perch 0.5-5 m above ground. Study on W slope of C Andes of Colombia gave estimated density of c. 0.2 individuals/ha, and estimated territory size of 2-4.5 ha. No further information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Locally quite common in Venezuela. Local in Colombia. In Ecuador, common and widespread in W and uncommon in E. In Peru, rare in W and uncommon in E. In Bolivia, generally uncommon but fairly common locally (e.g. Cochabamba). Occurs in several protected areas, e.g. Guaramacal National Park, Venezuela, Podocarpus National Park and Paschoa Forest Reserve, Ecuador, and Machu Picchu Historical Sanctuary, Peru.

**Bibliography.** Bloch *et al.* (1991), Butler (1979), Cory & Hellmayr (1924), Cresswell, Hughes *et al.* (1999), Cresswell, Mellanby *et al.* (1999), Ejeldsá & Krabbe (1990), Hilty (1985, 2003a), Hilty & Brown (1986), Kattan & Beltrán (1999, 2002), Krabbe & Coopmans (2000), Krabbe, Agro *et al.* (1999), Krabbe, Skov *et al.* (1998), Meyer de Schauensee & Phelps (1978), Parker & O'Neill (1980), Parker *et al.* (1982), Pfeifer *et al.* (2001), Poulsen (1996), Remsen (1985), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Schulenberg & Williams (1982), Stotz *et al.* (1996), Taylor (1995), Walker (2001), Williams & Tobias (1994), Zimmer (1930).







## 26. Variegated Antpitta

### *Grallaria varia*

**French:** Grallaire roi

**German:** Große Bartameisenpitta

**Spanish:** Tororoi Pintado

**Taxonomy.** *Formicarius varius* Boddaert, 1783, Cayenne.

Races form two geographically separate groups, N & W "varia group" also containing *cinereiceps* and *distincta*, and E & S "imperator group"; it has been suggested that these might represent two distinct species on basis of vocal differences, but geographical variation in song poorly studied. Racial affiliation of birds from SE Minas Gerais uncertain; currently included in *intercedens*, but further study required. Five subspecies recognized.

#### Subspecies and Distribution.

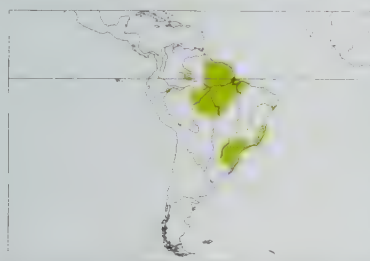
*G. v. cinereiceps* Hellmayr, 1903 - extreme S Venezuela and immediately adjacent N Brazil (upper R Negro), and NE Peru (N bank of R Napo).

*G. v. varia* (Boddaert, 1783) - the Guianas and Brazil N of R Amazon (W from lower R Negro).

*G. v. distincta* Todd, 1927 - Brazil S of R Amazon from R Madeira E to R Tapajós, S to Rondônia and N Mato Grosso.

*G. v. intercedens* Berlepsch & Leverkühn, 1890 - E & SE Brazil in Pernambuco, and from S Bahia S to SE Minas Gerais and probably Espírito Santo.

*G. v. imperator* Lafresnaye, 1842 - S Minas Gerais and Rio de Janeiro S to E Paraguay, NE Argentina (Misiones) and N Rio Grande do Sul.



**Descriptive notes.** 18-20.5 cm; male 90-121 g, two females 122 g and 126 g ("varia group"), one unsexed 134 g ("imperator group"). Adult has dark olive-brown forehead, feathers tipped black and with narrow pale shaft streaks, white lores; slate-grey crown and nape scaled black, dark rufescent-olive auriculars with very thin buff shaft streaks; olive-brown above, back scaled black, some feathers (especially on scapulars) with narrow tawny shaft streaks, wing-coverts with narrow buff or tawny streaks and small terminal buff spot; primaries tawny-brown, secondaries dark rufescent brown, tail rufescent brown; throat

dark rufescent olive, some feathers with narrow whitish shaft streaks, prominent white malar stripe tipped black at lower end; breast brown with narrow white streaks, a few black-bordered white or very pale buff feathers in centre forming small patch, lower breast striped pale buff, merging into pale buff belly (underparts variable, some individuals have pale areas more ochraceous); flanks variably spotted or streaked with black or dusky brown, crissum tawny-buff; iris dark brown, orbital skin bluish-grey; upper mandible dark grey, lower grey with base pink; tarsus greyish. Juvenile undescribed. Race *cinereiceps* is bright ochraceous below, lores and malar stripe also buff; *distincta* has shaft streaks of upperparts more distinct, brown colours of underparts less rufescent; *imperator* is larger than previous races, has crown extensively olive with more obvious pale streaks, most back feathers have small terminal buff spots, buff wing-covert spots larger, throat dark brown with narrow buff streaks, lower breast and upper belly olive-buff and lightly barred, lower belly pale buff with reduced barring or scaling; *intercedens* resembles last, but paler overall, more distinctly barred below. **Voice.** Song of two *imperator* birds 2.2-3.1 seconds long, a series of 11-14 notes at c. 0.5 kHz, beginning with 4-6 long notes at increasing volume, then rising slightly in pitch and pace to a series of 6-8 loud, shorter notes, last note weaker; song of one *varia* was 3 seconds long, similar, but steady in pitch and of only 8 notes, with especially first 4 drawn out, and without weaker final note.

**Habitat.** Humid forest and mature secondary woodland; at dawn, sometimes ventures into adjacent open areas, especially when these are wet. Lowlands to 640 m; in SE Brazil to 1400 m; apparently prefers elevated forest regions in Surinam.

**Food and Feeding.** Feeds on earthworms and other invertebrates, such as spiders, cockroaches (Blattodea), grasshoppers (Acrididae) and centipedes (Chilopoda). Solitary. Mainly terrestrial. Hops rapidly on forest floor, pausing to flick aside leaves with the bill, probing into soft, often damp ground.

**Breeding.** -Laying recorded in late Dec in Surinam and French Guiana, and in Oct and Nov in Argentina (Misiones); nestlings in Jun in Brazil (Manaus). Sings possibly only during breeding season, e.g. silent in SE Brazil (Rio Grande do Sul) in Jun-Sept; song given from perch up to 5 m above ground. Nest a shallow cup of damp rootlets, mosses, dead leaves and petioles, placed 1.2-2.5 m above ground in crevice of tree or atop debris in an old stump. Clutch 2 eggs, 32.3-36.4 (once 40) × 26.5-29.7 mm; incubation apparently by female alone, period 17 days; both parents tend nestlings.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon to rare; locally fairly common, e.g. in São Paulo (SE Brazil). Occupies relatively large range. N nominate race occurs in the Brownsberg Nature Park, in Surinam, and probably in other protected areas both in that country and in Brazil N of R Amazon. Races *cinereiceps* and *distincta* presumably occur in several protected areas. The two races in E & SE Brazil are generally local and more vulnerable, but substantial populations persist in São Paulo, and the species is known from several protected areas. These include Serra dos Órgãos, Itatiaia, Aparados da Serra, Alto do Ribeira, and Iguazu National Parks, as well as Serra do Brigadeiro, Carlos Botelho, Serra do Caparaó, Intervalos and Serra do Mar State Parks, and Augusto Ruschi Biological Reserve; also present in Iguazú National Park, in NE Argentina.

**Bibliography.** Aleixo & Galetti (1997), dos Anjos & Schuchmann (1997), dos Anjos *et al.* (1997), Belton (1985), Bencke & Kindel (1999), Bierregaard (1988), Borges *et al.* (2001), Buzzetti (2000), Canevari *et al.* (1991), Cardiff (1983), Chebez *et al.* (1999), Cohn-Haft *et al.* (1997), Cory & Hellmayr (1924), Donahue (1985), Énard (1982), Fraga & Narosky (1985), Friedmann (1948), Goerck (1999a), Graves & Zusi (1990), Haverschmidt & Mees (1994), Hayes (1995), Hilty (2003a), Krabbe & Coopmans (2000), Krabbe, Agro *et al.* (1999), Machado *et al.* (1998), Madroño, Robbins & Zyskowski (1997), Meyer de Schauensee & Phelps (1978), Oren & Parker (1997), Parker & Goerck (1997), de la Peña (1988), Peres & Whittaker (1991), Pinto (1978), Protomastro (2000), Quintela (1987), Reinert *et al.* (1996), Ridgely & Tudor (1994), do Rosário (1996), Ruschi (1979), Sargeant & Wall (1996), Schönwetter (1979), Scott & Brooke (1985), Sick (1993), Simon, Ribon *et al.* (1999), Snyder (1966), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Straneck & Carrizo (1990a), Stratford & Stouffer (1999), Tostain *et al.* (1992), Willard *et al.* (1991), Zimmer, K.J., Parker *et al.* (1997).

## 27. Scaled Antpitta

### *Grallaria guatemalensis*

**French:** Grallaire écaillée

**German:** Kleine Bartameisenpitta

**Spanish:** Tororoi Cholino

**Taxonomy.** *Grallaria guatemalensis* Prévost and Des Murs, 1846, Guatemala.

Races *carmelitae* and *sororia* only doubtfully distinct from *regulus*; moreover, distributional limits of the last two in C & S Peru remain to be clarified. Proposed race *binfordi* from SC Mexico (Mexico, Distrito Federal and Morelos), said to resemble *ochraceiventris* but with vertical stripes on breast, possibly valid, but its distinction from latter needs further corroboration; birds from N end of range described as race *mexicana*, but this generally regarded as a synonym of highly variable nominate race. Nine subspecies recognized.

#### Subspecies and Distribution.

*G. g. ochraceiventris* Nelson, 1898 - S Mexico from Jalisco E to W Hidalgo and from S Guerrero to S Oaxaca.

*G. g. guatemalensis* Prévost & Des Murs, 1846 - E & S Mexico (from NW Veracruz and N Oaxaca) SE to N Nicaragua.

*G. g. princeps* P. L. Slater & Salvin, 1869 - Costa Rica S to W Panama (Veraguas).

*G. g. chocoensis* Chapman, 1917 - E Panama (E Darién) and NW Colombia (Chocó).

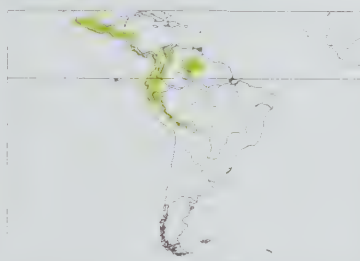
*G. g. carmelitae* Todd, 1915 - N Colombia in Santa Marta Mts, and Perijá Mts S to N Boyacá.

*G. g. aripoensis* Hellmayr & Seilern, 1912 - Trinidad.

*G. g. regulus* P. L. Slater, 1860 - from N & SW Colombia (in N, on W slope of E Andes in S César), and on Amazonian slope from W Venezuela (Mérida), S to C Peru (in W, S to Cajamarca), including adjacent E lowlands to extreme E Ecuador.

*G. g. sororia* Berlepsch & Stolzmann, 1901 - S Peru (from Cuzco) SE to C Bolivia (Santa Cruz).

*G. g. roraimae* Chubb, 1921 - tepuis of S Venezuela and adjacent N Brazil, and recently recorded in W Guyana.



**Descriptive notes.** 16-18 cm; one male 94-6 g (*guatemalensis*), one female 95 g (*chocoensis*), male 69-5-86 g, one female 79-8 g (*regulus/sororia*), unsexed average 98 g (*princeps*). Adult has light olive-brown forehead scaled black, whitish lores, grey crown and nape with feathers edged black, olive-brown auriculars with narrow ochraceous shaft streaks; upperparts, including wing-coverts, olive-brown, back feathers fairly broadly edged black, giving scaled effect; flight-feathers and tail tawny-brown; chin and throat ochraceous brown or tawny-brown with narrow pale shaft streaks, bordered by broad ochraceous or buff malar

stripe; lower throat paler to whitish, forming crescent, usually with at least some black-tipped feathers forming partial or complete necklace of spots; remaining underparts bright tawny-ochraceous, paler in centre of belly; iris dark brown, orbital skin bluish-grey; upper mandible black, lower grey; tarsus pinkish-grey. Juvenile undescribed. N races larger than S ones: *ochraceiventris* is much paler than nominate, with narrow black scaling above, throat without dusky feathers; *princeps* is more deeply coloured overall, with heavier black scaling above; *chocoensis* resembles previous, but darker above and on breast, crown more olive, wings more olive (less tawny), lores mixed rusty and blackish rather than whitish; *regulus* is smaller, has buff (rarely, white) malar stripe, dusky throat, buff or white crescent, usually pale tawny (rarely, white) stripes on dark brown breast, merging into tawny belly with variably extensive dark streaking; *carmelitae* is similar to last but darker and browner, less ochraceous; *sororia* is also similar, but malar stripe and breast markings white rather than buff, back greyer, wings and tail more olivaceous, underparts paler; *aripoensis* again similar, but lacks dusky throat patch, malar stripe deep buff, no dusky or buff marks on chest, darker below; *roraimae* has greyer crown. **Voice.** Song of *regulus* 2.5-3.6 seconds long, at intervals of 15-30 seconds, a rolling series of 30-50 notes at 0.5-0.6 kHz, volume and pitch increasing over first two-thirds of song, then levels, and at very end falls slightly, pace (after a few introductory notes) rapid over first two-thirds, 14-17 notes per second, then slows markedly with a few loud long notes before slightly faster end; female may answer with shorter trill. Song in S Peru (presumed *sororia*) differs in that notes in first two-thirds are at much slower pace, 6 per second, an entire song lasting 2.9-3.7 seconds being composed of only 18-23 notes.

**Habitat.** Floor and lower storey of humid and wet foothill and montane forest, especially in ravines and steep valleys; also secondary woodland, ash (*Fraxinus*) plantations; also lowland humid forest in E Ecuador. At 500-2500 m, locally down to 200 m or up to 2800 m. Occurs below *G. allenii* where ranges overlap, and in contact zone found in more disturbed habitats than that species.

**Food and Feeding.** Feeds primarily on a variety of arthropods; a dragonfly (Odonata), a nematode (Nematodea), medium-sized beetles and a millipede (Diplopoda) recorded as adult food. Identifiable items fed to nestlings at five nests included insects, insect larvae (e.g. Coleoptera, Lepidoptera), myriapods, and earthworms (Oligochaeta); of 79 feeds observed, 42% included at least one earthworm, and adults often delivered multiple earthworms (up to 5 at a time) which ranged from 2 cm to 6 cm in length. Hops on ground or logs, taking prey from the ground; sometimes flips dead leaves or probes into moist soil.

**Breeding.** Egg-laying in Mexico in May, Jun (Oaxaca) and Aug (Chiapas); eggs and nestlings in Sept in Guatemala; five nests with eggs in Jun in El Salvador; five nests in Apr-Jun and juveniles seen in Sept and Oct in Panama; in Colombia, two specimens in breeding condition in Apr (Perijá Mts), also downy chicks in Apr (Valle). Sings from inconspicuous perch, usually 3-10 m above ground. Nest a bulky cup or platform of large rotting dead leaves, vines, soft dead sticks, and moss, lined with fine rootlets and moss, placed against upright trunk, less often low in dense growth on stump, fallen log or tree fork, 0.6-2 m above ground; abandoned nest of another bird apparently used occasionally. Clutch 2 eggs, 29.8-30.7 × 24.6-25.5 mm; hatching black-skinned with black down; both parents take turns incubating, and both tend chicks; nestling period estimated at 17-19 days.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Generally uncommon and somewhat local; in some areas (e.g. SW Ecuador) widespread and fairly common in disturbed and strongly fragmented habitat. Occurs in several protected areas, e.g. Machu Picchu Historical Sanctuary, Peru; common in Tumbes National Reserve, Peru.



**Bibliography.** Allen (1998), Angehr (1999), Anon (1998a), van den Berg & Bosman (1984), Binford (1989), Blake, F.R. (1958), Blake, J.G. & Loisselle (2000), Bloch *et al.* (1991), Boesman (1998), Braun *et al.* (2003), Cardiff & Remsen (1981), Chapman (1931), Cory & Hellmayr (1924), Dickerman (1990), Dobbs *et al.* (2001), Edwards (1967), Edwards & Lea (1955), French (1991), Tjeldsá & Krabbe (1990), Tjeldsá & Majler (1996), Griscom (1932a), Herklotz (1961), Hernández *et al.* (1995), Herzog *et al.* (1999), Hilty (2003a), Hilty & Brown (1986), Howell & Webb (1992, 1995a), King, W.B. (1978/79), Koepeke (1961a), Krabbe & Coopmans (2000), Krabbe, Agro *et al.* (1999), Land (1970), Meyer de Schauensee & Phelps (1978), Miller (1963), Monroe (1968), Pinto (1978), Ridgely & Greenfield (2001), Ridgely & Gwyne (1989), Ridgely & Tudor (1994), Ridgely (1911), Robbins *et al.* (1985), Rowley (1966, 1984), Schaldach *et al.* (1997), Schönwetter (1979), Schulenberg (1987a), Slud (1964), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Temple (2002), Thurber *et al.* (1987), Todd & Carriker (1922b), Walker (2001), Wetmore (1943, 1972), Whitney *et al.* (1994), Wiedenfeld (1982), Williams & Tobias (1994), Wilson & Ceballos-Lascuráin (1993), Young *et al.* (1998).

## 28. Moustached Antpitta

### *Grallaria alleni*

French: Grallaire à moustaches

German: Grauscheitel-Ameisenpitta

Spanish: Tororoi Bigotudo

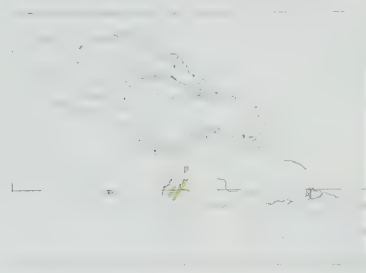
**Taxonomy.** *Grallaria alleni* Chapman, 1912, Salento, 7000 feet [c. 2140 m], Central Andes, Cauca, Colombia.

Probably closely related to *G. chthonia*. Two subspecies recognized.

#### Subspecies and Distribution.

*G. a. alleni* Chapman, 1912 - Colombia on W slope of C Andes (Risaralda, in Cauca).

*G. a. andaquiensis* Hernández & Rodríguez, 1979 - head of Magdalena Valley, in Colombia, and both slopes in N Ecuador (S to Napo and Cotopaxi).



**Descriptive notes.** 16.5 cm; two males 64 g and 77 g. Adult has light olive-brown forehead and slate-grey crown and nape, feathers narrowly edged blackish, white lores narrowly dark-tipped; auriculars fairly uniform olive-brown, shafts pale only at bases; upperparts dark rufescent brown to olive-brown, fairly broad blackish feather edges giving scaled effect; tail rufous-chestnut; chin and throat rufescent brown, broad white malar stripe, white lower throat forming crescent across chest, breast olive-brown with narrow white streaks, belly buffy white, flanks and crissum washed cinnamon; iris dark brown; bill black.

lower mandible sometimes lighter (possibly younger birds); tarsus vinaceous grey. Distinguished from similar *G. guatemalensis* by more prominent streaks on breast forming star-like pattern, whiter belly, entirely black bill with upper mandible straight, not curved. Juvenile undescribed. Race *andaquiensis* is browner, without grey wash, belly ochraceous instead of white, but sometimes with scattered whitish feathers. Voice. Song 1-8.3 seconds long, given at intervals of 7-13 seconds, a series of 17-25 notes at c. 0.8 kHz, at even pace of 8-9 per second, volume increasing at first, pitch slightly higher in second half.

**Habitat.** Floor and dense undergrowth within 3 m of ground in wet (mossy) primary forest, mainly in ravines and on steep slopes; at 1800-2500 m. Occurs above *G. guatemalensis* where ranges overlap, and in contact zone found in less disturbed habitats than that species.

**Food and Feeding.** Forages on the ground. No other details available.

**Breeding.** Sings from perch 0.5-3 m above ground. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** ENDANGERED. Restricted-range species: present in Colombian Inter-Andean slopes EBA. Until 1990 known from only two specimens, and feared extinct. In 1990 rediscovered in Ecuador (race *andaquiensis*). Although a huge percentage of forest habitat in the northern part of the species' range has been destroyed, the nominate race was rediscovered in the C Andes of Colombia in 1995, in the small Otún-Quimbaya Fauna and Flora Sanctuary, near the type locality. Seemingly suitable habitat exists nearby in two protected areas, Ucumari Regional Park (in Risaralda) and Alto Quindío Acaeme Natural Reserve, but its presence in those has not been established. Race *andaquiensis* currently occurs in at least three protected areas: Cueva de los Guácharos National Park in S Colombia, the Maquipucuna Reserve and the Mindo-Nambillo Cloudforest Reserve, both in NW Ecuador, and the recently established Gran Sumaco National Park in NE Ecuador. It probably also occurs locally in other reserves and national parks on the E slope in Ecuador. Despite some loss and degradation of habitat in N Ecuador, large areas of suitable forest remain intact in e.g. Napo; even so, the increasing human population in the region represents a threat. Effective protection of habitat within the areas known to be occupied by *andaquiensis* should secure the survival of this taxon. Since the species is now known to have a larger range than was previously believed, it could perhaps be regarded as less seriously threatened, and may be better placed in the conservation category of Vulnerable.

**Bibliography.** Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), Freile (2000, 2002), Hernández & Rodríguez (1979), Hilty (1985), Hilty & Brown (1986), King, W.B. (1978/79), Krabbe & Coopmans (2000), Meyer de Schauensee (1982), Negret (2001), Pfeiffer *et al.* (2001), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield & Capper (2000), Stotz *et al.* (1996), Taylor (1995), Wege & Long (1995).

## 29. Tachira Antpitta

### *Grallaria chthonia*

French: Grallaire du Tachira

German: Táchiraameisenpitta

Spanish: Tororoi de Táchira

**Taxonomy.** *Grallaria chthonia* Wetmore and Phelps, Jr., 1956, Río Chiquito, 1800-2100 m, south-west Táchira, Venezuela.

Probably closely related to *G. alleni*. Monotypic.

**Distribution.** W Venezuela in SW Táchira (Hacienda La Providencia, on R Chiquito).



Distinguished from *G. guatemalensis* by slightly larger size on average, more slender bill, barred underparts. Juvenile undescribed. Voice. Unknown.

**Habitat.** Tall dense cloudforest, presumably in mossy undergrowth and on floor; at 1800-2100 m.

**Food and Feeding.** No information.

**Breeding.** Nothing known.

**Movements.** Presumably sedentary.

**Status and Conservation.** ENDANGERED. Restricted-range species: present in Colombian East Andes EBA. Known from only four specimens collected at the type locality in Feb 1955 and Mar 1956. A three-day search for the species here in Sept 1990 was unsuccessful; this may indicate that it sings only seasonally, rather than that it has vanished, as the locality still holds prime forest above 1600 m. It lies within El Tamá National Park, which extends over 1390 km<sup>2</sup>; habitat here is, however, threatened by plans for mining concessions for 100 km<sup>2</sup> of the park. Moreover, in Dec 1996, coffee plantations in the Chiquito Valley had advanced to 1600 m, and much forest at 1900-2200 m had been converted to agriculture; although the species was not found, it may have been present in neighbouring valleys, which were apparently less disturbed. Field surveys are urgently needed in order to determine the current true status of this virtually unknown antpitta.

**Bibliography.** Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Hilty (2003a), Krabbe & Coopmans (2000), Meyer de Schauensee (1982), Meyer de Schauensee & Phelps (1978), Renjifo *et al.* (1997), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield & Capper (2000), Stotz *et al.* (1996), Wege & Long (1995), Wetmore & Phelps (1956).

## 30. Plain-backed Antpitta

### *Grallaria haplonota*

French: Grallaire à dos uni

German: Ockerbart-Ameisenpitta

Spanish: Tororoi Torero

**Taxonomy.** *Grallaria haplonota* P. L. Selater, 1877, vicinity of Caracas, Venezuela.

Racial allocation of birds from Amazonian slope of E Andes, in Colombia, and of others tape-recorded in San Martín, in N Peru, not yet determined; both populations tentatively placed with *chaplinae*, but further study required. Four subspecies recognized.

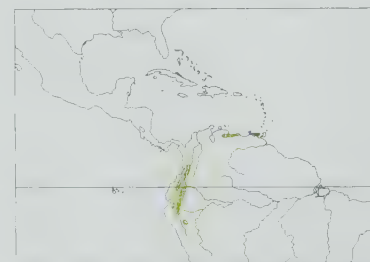
#### Subspecies and Distribution.

*G. h. haplonota* P. L. Selater, 1877 - N Venezuela in interior chain in Lara, and coastal mountains (except Paria Peninsula).

*G. h. pariae* Phelps, Sr. & Phelps, Jr., 1949 - Paria Peninsula.

*G. h. parambae* Rothschild, 1900 - Pacific slope from W Colombia (Risaralda) to S Ecuador (El Oro).

*G. h. chaplinae* Robbins & Ridgely, 1986 - Amazonian slope of E Andes in Colombia, and E Ecuador and N Peru (Cordillera del Cóndor in extreme N, also San Martín).



**Descriptive notes.** 16.5-17 cm; 2 males 82 g and 83.5 g, unsexed birds in coastal Venezuela 75-90 g. Adult is brown above, crown often slightly greyer, with whitish lores; tail dark rufescent; throat white, dusky malar streak, pale buff moustache; rest of underparts ochraceous, somewhat darker on breast; iris dark brown; upper mandible black, lower brownish-horn; tarsus grey. Juvenile undescribed. Racial variation slight: *pariae* very like nominate but underparts darker and more ochraceous, and undertail-coverts more red-dish; *parambae* has upperparts dark olive-brown with a rufous tinge; *chaplinae* is

greenish-olive and scaly above, with less white on throat. Voice. Song 4-5 seconds long, given at intervals of 8-18 seconds, a series of 10-18 notes at 0.6-0.7 kHz (in Venezuela slightly higher-pitched), pitch and volume increasing initially and falling somewhat at end (volume not falling in Venezuela), pace regular at c. 3 notes per second.

**Habitat.** Floor and lower understorey of humid and wet montane forest and forest borders, especially on fairly steep slopes and along creeks; at 700-1950 m. In W Colombia, replaced sharply at higher levels by *G. flavotincta*.

**Food and Feeding.** Small invertebrates; spiders, worms, myriapods, snails, soft insects, once a bush-cricket (Tettigoniidae), and earth (up to 80%) found in stomachs. Even large prey swallowed whole. Solitary. Chiefly terrestrial. Walks and runs on ground.

**Breeding.** Breeds mainly in Apr-Aug in coastal Venezuela. One nest described, a hemispherical stick structure with side entrance, placed on ground. Clutch 2 eggs, 30.4 × 23.8 mm.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common; seemingly most numerous in N Venezuela. Occurs in Henri Pittier and Guatopo National Parks, in Venezuela, and Río Nambi Natural Reserve, in Colombia; found at the lower levels of Podocarpus and Gran Sumaco National Parks, in Ecuador, and probably also present in several other protected areas.

**Bibliography.** Allen (1998), Butler (1979), Cory & Hellmayr (1924), Hilty (2003a), Kirwan & Marlow (1996), Meyer de Schauensee (1982), Meyer de Schauensee & Phelps (1978), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Robbins & Ridgely (1986, 1990), Rodner *et al.* (2000), Salaman (1994), Schäfer (2002), Schönwetter (1979, 1988), Schulenberg & Awbrey (1997a), Schulenberg & Wust (1997), Stiles & Álvarez-López (1995), Stotz *et al.* (1996), Taylor (1995), Wetmore (1939).









PLATE 74

inches 4  
cm 10



### 31. Tawny Antpitta

#### *Grallaria quitensis*

**French:** Grallaire de Quito **German:** Ockerwangen-Ameisenpitta **Spanish:** Tororoi Leonado

**Taxonomy.** *Grallaria quitensis* Lesson, 1844, vicinity of Quito, Ecuador.

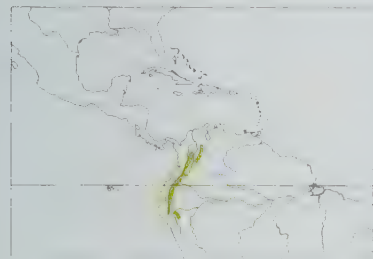
Races differ vocally from each other, and may represent three separate species; *alticola* particularly distinctive. In addition, the taxon *saltuensis*, currently treated as a race of *G. rufula*, may possibly be better placed with present species. Three subspecies currently recognized.

#### **Subspecies and Distribution.**

*G. q. alticola* Todd, 1919 - E Andes of Colombia.

*G. q. quitensis* Lesson, 1844 - C Andes of Colombia S to extreme N Peru.

*G. q. atensis* Carriker, 1933 - C Andes of N Peru in S Amazonas and E La Libertad.



**Descriptive notes.** 16-18 cm; male 62-78 g, female 58.5-81.2 g. Adult has whitish ocular region and pale lores, with side of head otherwise rufous-olivaceous mixed with blackish-brown; upperparts olivaceous brown, crown and back with greyish wash, rump browner, dull rufous to clay-coloured; underparts tawny-brown with indistinct white mottling, centre of belly whitish; iris chestnut-brown; bill blackish-grey; tarsus brownish-grey. Juvenile undescribed. Race *alticola* is similar to nominate, but smaller, with smaller bill, browner (less olive) above, underparts extensively mottled with white; *atensis* is darker, and more

distinctly mottled with white below. **VOICE.** Song (*quitensis*) 0.9-1.3 seconds long, given at intervals of 4-8 seconds, a series of 3 piercing notes at 1.8-2 kHz, with slight pause after first (usually highest-pitched) note, also less common variants of 2 notes, or of 3 lower-pitched (1.4-1.5 kHz) notes, or with first note lowest; *atensis* song slightly higher-pitched (2.2-2 kHz), last note drawn out with strong upward inflection; song of *alticola* a lively "pit-wheer perwheedit" with accent on first syllable, the "perwheedit" also sometimes given alone, and several other short notes can be heard at times. Call given at intervals of 1-3 seconds, in *quitensis* an explosive single downslurred note, beginning with first overtone loudest (at 4.5 kHz) and ending with fundamental loudest (at 1.5 kHz), in *atensis* a longer "tree-eh" at 1.7-3 kHz, first rising with a treble quality, then falling. **Habitat.** Elfin forest and páramo with scattered low shrubbery and trees, especially near lakes or swampy areas; also in scrub and hedgerows in pasture; frequently venturing into the open, even in broad daylight. At 2200-4500 m, mostly above 2800 m.

**Food and Feeding.** Stomach contents included various insects (e.g. beetles), larvae (e.g. of Lepidoptera, Diptera), a leech; one held mostly berry seeds 2 mm long, another contained "fruit"; small bones, possibly of a frog, found in one stomach. Indigestible food parts are regurgitated as a small round pellet. Solitary, occasionally in pairs. Makes a few hops on ground, stops, looks, often with head tilted sideways. Picks prey from ground; flicks wings and tail and bobs on long legs after devouring prey or in conflict.

**Breeding.** In Colombia, specimens in breeding condition in Feb (Cauca) and Aug (Santander), and juvenile in Jun (Cundinamarca). Territorial throughout year; sings all day, often from semi-conspicuous perch. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Fairly common to common. In Ecuador, nominate race is numerous around Quito (e.g. Papallacta area), and occurs in several protected areas, e.g. Cotopaxi National Park, Páramo Forest Reserve and Las Cajas National Recreation Area; also present in Puracé National Park, Colombia. Colombian *alticola* is common in Chingaza and El Cocuy National Parks, and also occurs in Sumapaz National Park. Peruvian *atensis* is at least locally common; occurs in Rio Abiseo National Park.

**Bibliography.** Bloch *et al.* (1991), Butler (1979), Cory & Hellmayr (1924), Cresswell, Hughes *et al.* (1999), Cresswell, Mellanby *et al.* (1999), Fjeldså & Krabbe (1990), Freile (2002), Hilty & Brown (1986), Koenen & Koenen (2000), Meyer de Schauensee (1982), Olivares (1971), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Pfeiffer *et al.* (2001), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Salaman (1994), Stotz *et al.* (1996), Taylor (1995), Williams & Tobias (1994).

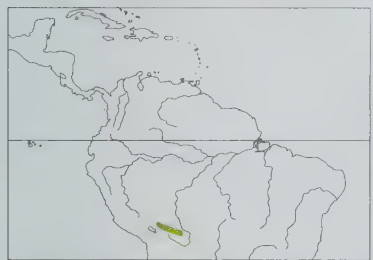
### 32. Rufous-faced Antpitta

#### *Grallaria erythrotis*

**French:** Grallaire masquée **German:** Rostwangen-Ameisenpitta **Spanish:** Tororoi Carirrufo

**Taxonomy.** *Grallaria erythrotis* P. L. Slater and Salvin, 1876, Tilotilo, western Yungas, Bolivia. Monotypic.

**Distribution.** Bolivia, in Yungas of La Paz, Cochabamba and Santa Cruz.



**Descriptive notes.** 18-5 cm; male 53-66 g, one female 61 g. Adult has orange-rufous sides of head and neck, olivaceous upperparts; throat and abdomen white, breast orange-rufous with obscure white streaks, sides olivaceous; iris dark brown; bill blackish, tipped horn; tarsus grey to fleshy grey. Juvenile is grey-brown above, almost uniform on top of head, back with cinnamon-buff spots and rather inconspicuous tawny barring, lower back conspicuously barred, chin whitish, below very profusely barred dusky brown and cinnamon-buff, some pale spots on breast and pale buff belly, orange lower mandible. **VOICE.** Song 1.2-

1.4 seconds long, given at intervals of 5-10 seconds, a series of 3 whistles, pure or with double quality, first lowest, falling or at even pitch, last 2 alike or final note slightly higher-pitched, both

rising; overall pitch rather variable, between 1.3 and 2.1 kHz, each song ranging over 0.2-0.3 kHz. Call a short, single, descending whistle at 2.2-1.8 kHz.

**Habitat.** Borders of humid montane forest and in regenerating shrubby areas, often along roads or at edges of landslides and clearings; less commonly within deep forest. At 2000-3050 m.

**Food and Feeding.** Food includes beetles, ants, spiders and caterpillars; rarely, seeds. Hops on the ground, often venturing into the open.

**Breeding.** Details from captivity: clutch 2 eggs, 28 × 23 mm; incubation period c. 15 days; nestling period c. 15 days; young fully independent 2 weeks after fledging.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Bolivian and Peruvian Upper Yungas EBA. Fairly common to common. Occurs in Carrasco National Park, an area covering 13,000 km<sup>2</sup>.

**Bibliography.** Bell & Bruning (1976), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Gemuseus & Sagot (1996), Hinojosa *et al.* (1998), Meyer de Schauensee (1982), Remsen (1985), Remsen & T aylor (1989), Remsen *et al.* (1982), Ridgely & Tudor (1994), Stotz *et al.* (1996), Whitney *et al.* (1994), Wiedenfeld (1982).

### 33. Brown-banded Antpitta

#### *Grallaria milleri*

**French:** Grallaire ceinturée **German:** Brustband-Ameisenpitta **Spanish:** Tororoi Bandedado

**Taxonomy.** *Grallaria milleri* Chapman, 1912, Laguneta, 10,300 feet [3140 m], Central Andes, near Quindio Pass, Cauca, Colombia.

Monotypic.

**Distribution.** W slope of C Andes of Colombia (in Caldas, Risaralda and Quindio) and E slope in Tolima.



**Descriptive notes.** 16.5 cm; 52.5 g. Adult has grey lores, dark brown side of head and upperparts, pale grey throat and belly, brown breast and flanks; iris dark brown; bill black, usually whitish tip; tarsus bluish-grey. Juvenile is barred and flecked blackish and buff all over. **VOICE.** Song 1.1 seconds long, given at intervals of 8-9 seconds, a series of 3 pure whistles with a pause after first note, consecutive notes higher-pitched, first at 2.4, second at 2.5 and last at 2.8 kHz. Frequently heard call a loud, slightly rising, whistled "wooee".

**Habitat.** Floor and lower undergrowth of humid montane forest and cloudforest; recorded in early second growth with high density of herbs and shrubs, understorey of 30-year-old alder (*Alnus*) plantations, and understorey of 30-year-old forest. At 1800-3140 m. Co-exists with *G. squamigera*, *G. nuchalis*, *G. ruficapilla*, *G. rufocinerea* and *Grallaricula nana*.

**Food and Feeding.** Details of diet not documented. Terrestrial. Picks prey from the forest floor, making rapid sprints and by shaking leaves; rarely, flies short distances or perches on low twigs. During 52 minutes of observation of a pair feeding a recently fledged juvenile, the parents remained within a 10-m radius of the young, and briefly joined a mixed-species flock.

**Breeding.** Adult specimens in Aug-Nov were not in breeding condition; immatures collected in Aug and Sept; a pair with a fledgling observed in Jun. Clutch size not recorded; both parents fed young. Study on W slope gave estimated density of c. 1.3 individuals/ha, and estimated territory size of 0.5-5.4 ha.

**Movements.** Presumably sedentary.

**Status and Conservation.** **ENDANGERED.** Restricted-range species: present in Northern Central Andes EBA. Although most of its habitat has disappeared, some tracts remain. The species is known to occur in only a single protected area, the recently established 42-km<sup>2</sup> Ucumari Regional Park in department of Risaralda; at present only about half of the park holds suitable habitat, but remaining part is expected to regenerate rapidly. The species' voice only recently became known, and this immediately led to discoveries of new sites, all of which, however, were within a relatively restricted area. Considering the species' tolerance of disturbed habitats, its situation may not be critical, granted the continued existence of the park and the survival of other forest patches where it occurs. Additional surveys would be beneficial.

**Bibliography.** Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hilty (1985), Hilty & Brown (1986), Kattan & Beltrán (1997, 1999, 2002), King, W.B. (1978/79), López *et al.* (2000), Meyer de Schauensee (1982), Negret (2001), Pfeiffer *et al.* (2001), Renjifo *et al.* (1997), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield & Capper (2000), Stotz *et al.* (1996), Wege & Long (1995).

### 34. Bicoloured Antpitta

#### *Grallaria rufocinerea*

**French:** Grallaire bicolore **German:** Zweifarben-Ameisenpitta **Spanish:** Tororoi Bicolor

**Taxonomy.** *Grallaria rufocinerea* P. L. Slater and Salvin, 1879, Santa Elena, Antioquia, Colombia. Two subspecies recognized.

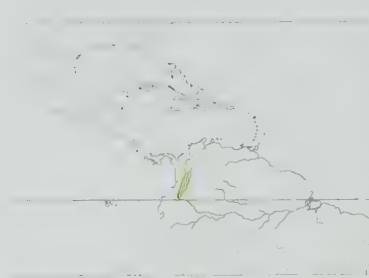
#### **Subspecies and Distribution.**

*G. r. rufocinerea* P. L. Slater & Salvin, 1879 - C Andes of Colombia from S Antioquia S to W Huila.

*G. r. romeroana* Hernández & Rodríguez, 1979 - S Colombia (head of Magdalena Valley and W Putumayo) S to NE Andes of Ecuador (NW Sucumbios).

**Descriptive notes.** 15.5-16 cm; 44-8 g. Adult has head, upperparts and throat rufous-brown, feathers of throat showing grey bases; rest of underparts grey, centre of belly mottled with whitish; iris dark brown; bill black; tarsus grey. Juvenile undescribed. Race *romeroana* has solid rufous-brown chin and throat, more extensive whitish scaling on belly. **VOICE.** Song c. 1 second long, given late in morning at intervals of 3-4 seconds, a loud, slightly rising whistle at c. 2 kHz, the very end often upslurred and then downslurred (or the reverse). A series 5-6 seconds long of 6-7 whistles, de-





size of 1.4-1.5 ha. No other data.

**Movements.** Presumably sedentary.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Northern Central Andes EBA. Uncommon to rare. Considered Vulnerable owing to its small range. Agricultural expansion and human colonization have resulted in widespread deforestation within the region, and present species is thought to have declined greatly since the early 1900s. Nevertheless, tolerates considerable disturbance, and is probably not under immediate threat in Colombia. In Colombia, it occurs also in Puracé National Park, Navarco Reserve and Alto Quindío Acaime Natural Reserve. In its restricted Ecuadorian range, the species faces total habitat loss within forthcoming decades.

**Bibliography.** Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hernández & Rodríguez (1979), Hilty (1985), Hilty & Brown (1986), Kattan & Beltrán (1999, 2002), López *et al.* (2000), Negret (2001), Nilsson *et al.* (2001), Préfer *et al.* (2001), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Sclater & Salvin (1879), Stattersfield & Capper (2000), Stotz *et al.* (1996), Wege & Long (1995).

### 35. Stripe-headed Antpitta

#### *Grallaria andicola*

**French:** Grallaire des Andes **German:** Strichelkopf-Ameisenpitta **Spanish:** Tororoi Andino  
**Other common names:** Puno Antpitta (*punensis*)

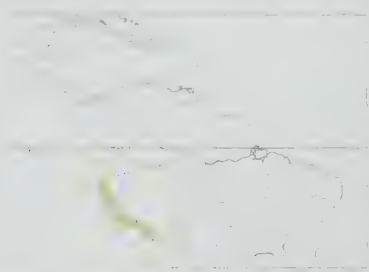
**Taxonomy.** *Hypsiphamon andicola* Cabanis, 1873, Maraynioc, Junín, Peru.

Relationships uncertain; possibly merits separation in monospecific genus. Song of race *punensis* remains unknown, but call differs: may be better treated as a separate species. Species name *andicola* is a noun and as such is invariable, so and must not be altered to "*andicola*". Two subspecies currently recognized.

#### **Subspecies and Distribution**

*G. a. andicola* (Cabanis, 1873) - Peru locally in W Andes (S Cajamarca S to Ayacucho) and in C Andes (S Amazonas S to Apurímac).

*G. a. punensis* Chubb, 1918 - SE Peru (Cuzco, Puno) and W Bolivia (W La Paz).



**Descriptive notes.** 16-16.5 cm; male 48-60 g, female 51-66 g. Adult has whitish lores and eyering; sides of head and neck streaked whitish, buff and blackish; grey-brown above, crown and back prominently marked with blackish-bordered whitish or buff streaks; primaries edged dull olivaceous rufous, tail dull reddish-brown; centre of throat whitish or buff, breast whitish with buff and blackish scaling, breast side and flanks streaked whitish, buff and blackish, belly mixed buff and whitish, spotted with black; iris brown; bill mostly black; tarsus blue-grey. Juvenile is spotted to barred throughout; immature like adult, but tips

of wing-coverts and secondaries mottled, and tail feathers pointed and pale-tipped. Race *punensis* has blackish crown with orange-buff streaks, unstreaked back, darker buff on face. **Voice.** Song (*andicola*) 7-13 seconds long, given only a few times during an entire morning, a wheezy series of 30-45 notes at even pace of 3-3.4 per second, rising steadily in pitch from 3 to 4 kHz (first overtone) throughout or just over first half and then levelling, sometimes terminated by series c. 1 second long of sharply rising (to 5.5 kHz) notes at accelerated pace of 10 per second. Another song, sometimes given simultaneously (perhaps a duet) at 7-9-second intervals, is a rising, frog-like, 1-2-second long trill that increases in volume, pace c. 50 notes per second, pitch 2-2.3 kHz (fundamental). Call (*andicola*) a single, short, weak, descending "cheert" at 4-5-3-5 kHz, sometimes repeated every 4-5 seconds for several minutes; call of *punensis* reportedly 1 or 2 usually mellower notes, resembling call of Great Thrush (*Turdus fuscater*).

**Habitat.** Occurs mainly in *Polylepis* woodland, but also in heavily disturbed habitats, and sometimes found in bunch-grass areas with just a few bushes and boulders. Recorded at elevations of 3000-4300 m.

**Food and Feeding.** One stomach held larvae of noctuid moths; another contained larvae and insects. Hops on the ground, in bushes, or on thick mossy branches and horizontal trunks; often freezes for very long periods.

**Breeding.** No information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common. Although its *Polylepis* habitat is steadily diminishing, the species tolerates considerable disturbance and is probably not at immediate risk. Occurs in Huascarán National Park and Machu Picchu Historical Sanctuary, in Peru.

**Bibliography.** Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Meyer de Schauensee (1982), Parker *et al.* (1982), Ridgely & Tudor (1994), Stotz *et al.* (1996), Walker (2001), Wheatley (1994), Zimmer (1930).

### 36. Cundinamarca Antpitta

#### *Grallaria kaestneri*

**French:** Grallaire de Kaestner **Spanish:** Tororoi de Cundinamarca  
**German:** Cundinamarcaameisenpitta

scending from c. 2.5 to 2 kHz, perhaps a female vocalization, sometimes given in duet with male song.

**Habitat.** Floor and lower understorey of humid montane forest, less frequently secondary growth and at borders. At 2400-3150 m, locally down to 1950 m.

**Food and Feeding.** Diet includes insects. Foraging behaviour not described in detail; apparently much as that of other *Grallaria*.

**Breeding.** Specimen in breeding condition in Jun (SE Antioquia). Study on W slope of C Andes of Colombia gave estimated density of c. 0.8 individuals/ha, and estimated territory

**Taxonomy.** *Grallaria kaestneri* Stiles, 1992, c. 3 km ENE of Monterredondo, Amazonian slope, Cundinamarca, Colombia.

Considered to be close relative of larger *G. bangsi*. Monotypic.

**Distribution.** Amazonian slope of Colombian Andes in Cundinamarca (SE of Bogotá), and presumably also in adjacent Meta.



**Descriptive notes.** 15.5 cm; three females 45.8-49.4 g. Adult is mottled dull whitish and dull olive on face, ear-coverts with pale shafts; dark greenish-olive above, feathers narrowly fringed sooty, and with very fine, faint blackish barring except on lower rump and uppertail-coverts; wings rich brown, tail blackish-brown; throat whitish, lightly mottled with greyish-olive and dusky, breast, sides and flanks greenish-olive with narrow dull whitish shaft streaks, streaks broadest on sides and flanks, centre of belly dull white, crissum dull olive-buff; wing-linings cinnamon; iris dark brown; bill slate-grey, with pale horn cutting edges and tip;

tarsus plumbeous to light purplish-grey. Juvenile not known. **Voice.** Song 1 second long, consisting of 3 similar whistles given at increasing pitch (2.5, 2.8 and 2.9-3 kHz), with a slight pause after the slightly shorter first note; last note is sometimes omitted. Call is a double-note whistle beginning at 5.8-6 kHz and falling abruptly to c. 5 kHz, the first part in particular being very sharp and piercing.

**Habitat.** Floor and lower undergrowth of humid montane forest and mature secondary woodland; preference for dense, dark understorey around edges of gaps, beneath a broken to fairly closed canopy. At 1800-2300 m.

**Food and Feeding.** Recorded food items include beetles, cockroaches (Blattodea), katydids, spiders and earthworms. Highly terrestrial; only rarely ascends to perches a metre or more above ground. Hops on the forest floor, pausing to flip leaves; rummages in leaf litter and fallen bromeliads, or digs briefly in soft ground.

**Breeding.** No data on season; probably during second half of year, coinciding with middle and end of rainy season. Sings from perch within 1 m of ground. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Colombian East Andes EBA. Fairly common at its two known localities in Cundinamarca, occurring at density of 1 pair/1-1.5 ha; thought likely to be present also in adjacent parts of Meta, between these two sites, and perhaps also farther N and S in Cundinamarca. The species' ability to occupy fairly heavily disturbed forest and old second growth suggests that it may be resistant to local extirpation, so long as some tree cover is maintained. Establishment of protected areas within its range, before the area is completely deforested, would seem an urgent priority. It occurs in the area of Farallones de Medina, c. 50 km NE of type locality; this may be most suitable for such protection, as it still holds continuous forest down to 1000 m. Elsewhere along the Amazonian slope in Colombia, little forest remains in the lower half of this antpitta's elevational range.

**Bibliography.** Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield & Capper (2000), Stattersfield *et al.* (1998), Stiles (1992), Stotz *et al.* (1996), Wheatley (1994).

### 37. Santa Marta Antpitta

#### *Grallaria bangsi*

**French:** Grallaire des Santa Marta **Spanish:** Tororoi de Santa Marta  
**German:** Ockerkehl-Ameisenpitta

**Taxonomy.** *Grallaria bangsi* J. A. Allen, 1900, El Libano, 7000 feet [c. 2140 m], Santa Marta Mountains, Colombia.

Probably fairly closely related to *G. kaestneri*. Monotypic.

**Distribution.** N Colombia in Santa Marta Mts.



**Descriptive notes.** 18 cm; one unsexed bird 62.0 g. Adult has dull greyish-olive crown, whitish loreal spot, brown ear-coverts and region below eye with whitish shaft streaks, grey side of neck; dull olivaceous back and rump, brown wings and tail; throat tawny with indistinct white streaks, rest of underparts white, streaked dusky, a few tawny streaks on breast (variable), olive-brown flanks streaked white; iris brown; upper mandible black, lower leaden blue; tarsus leaden blue. Juvenile undescribed. **Voice.** Song 0.8-1 second long, given at intervals of 6-11 seconds, 2 similar whistles, the first at 1.9-2.1 kHz, slightly rising, the second

distinctly rising from 1.9 to 2.7 kHz. Call 0.25 seconds long, given every 2-5 seconds for minutes on end, a single, squeaky, rising "queet" at 4.5-5.3 kHz (first overtone), usually with several audible harmonics.

**Habitat.** Floor and lower understorey of humid montane forest, mature secondary woodland, and tangled borders. At 1200-2400 m, mainly above 1600 m.

**Food and Feeding.** Details of diet not recorded. Hops on the ground, occasionally perching on low horizontal branches. Seemingly less shy than congeners, sometimes feeding in small open spaces, clearings and along edges of roads and tracks, especially in early morning.

**Breeding.** Specimen in breeding condition in Sept; pin-feathered juvenile accompanying adult in Jul; immature collected in May. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Santa Marta Mountains EBA. Common within its small range. Nevertheless, owing to extensive and ongoing deforestation, and severe degradation of remaining forest habitat, despite formal protection, this species could become threatened. Being relatively less shy than other antpittas, however, it may prove to be reasonably adaptable. Present in Los Nevados National Park.

**Bibliography.** Collar *et al.* (1994), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hilty & Brown (1986), Meyer de Schauensee (1982), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield & Capper (2000), Stiles (1992), Stotz *et al.* (1996), Todd & Carriker (1922b).



## 38. White-throated Antpitta

### *Grallaria albigula*

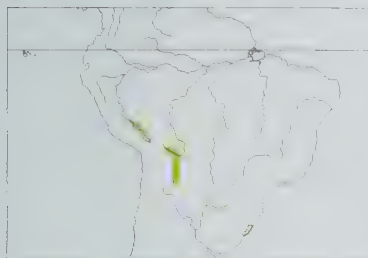
**French:** Grallaire à gorge blanche

**German:** Graufanken-Ameisenpitta

**Spanish:** Tororoí Gorgiblanco

**Taxonomy.** *Grallaria albigula* Chapman, 1923, Santo Domingo, 6000 feet [c. 1830 m], Puno, Peru. May belong in the superspecies formed by *G. erythroleuca*, *G. capitalis*, *G. przewalskii*, *G. hypoleuca* and *G. flavotincta*. Birds from Jujuy, in NW Argentina, described as race *cinereiventris* on basis of two specimens with darker belly and sepia-olive (rather than olive-grey) flanks; validity of this taxon requires confirmation. Monotypic.

**Distribution.** SE Peru (Madre de Dios, Puno), and from C Bolivia (N Cochabamba) S on Andean slope to NW Argentina (Jujuy, Salta).



**Descriptive notes.** 18.5 cm; male 84-92 g, two females 87 g and 90 g. Adult has crown and head side bright chestnut-rufous, prominent white eyering and white lores; rest of upperparts olive-brown; edges of primaries tawny-brown; tail dull brown, slightly reddish; throat white, breast and belly pale to medium grey, darkest on breast side and flanks, flanks also washed with olive, crissum pale to medium grey mixed with olive; iris brown; upper mandible blackish-grey, lower blue-grey; tarsus blue-grey. Juvenile undescribed. **VOICE.** Song 1-1.2 seconds long, given at intervals of 8-14 seconds for several minutes, 2 whistled notes at 1.1-1.3 kHz, second note distinctly rising in pitch. Call pitched like song, a single short, falling whistle repeated at intervals of 1-3 seconds, usually in series of 4-11.

**Habitat.** Inhabits floor and lower undergrowth of light to moderately dense, humid montane forest; in Argentina also in semi-deciduous forest and alder (*Alnus*) woodland with dense understorey. Occurs at 800-1700 m.

**Food and Feeding.** One stomach held caterpillars, cockroaches (Blattodea), other insects, and a spider. Hops on ground, stops, often tilting head slightly to one side as it looks, snatching prey from ground with quick darts.

**Breeding.** No information. Sings from ground and in low tangles within 1 m of ground.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Bolivian and Peruvian Lower Yungas EBA and Argentine and South Bolivian Yungas EBA. Considered generally uncommon to locally common; fairly common in Peru. Common in Calilegua National Park, in Argentina. Occurs also in Baritú National Park, Argentina, and in Carrasco National Park, Bolivia.

**Bibliography.** Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Cory & Hellmayr (1924), Fjeldså & Maijer (1996), Gemuseus & Sagot (1996), Meyer de Schauensee (1982), Narosky & Yzurieta (1993), Olrog & Contino (1970), Parker & Rowlett (1984), Parker *et al.* (1982), de la Peña (1988), Remsen & Traylor (1989), Ridgely & Tudor (1994), Stotz *et al.* (1996), Straneck & Carrizo (1990d), Zimmer (1934a).

## 39. Red-and-white Antpitta

### *Grallaria erythroleuca*

**French:** Grallaire de Cuzco

**German:** Weißflecken-Ameisenpitta

**Spanish:** Tororoí de Cuzco

**Other common names:** Chestnut-brown Antpitta

**Taxonomy.** *Grallaria erythroleuca* P. L. Slater, 1874, Huasampilla, Cuzco, Peru.

Forms a superspecies with *G. capitalis*, *G. przewalskii*, *G. hypoleuca* and *G. flavotincta*; sometimes treated as conspecific with some or all of those. Populations from N Cordillera Vilcabamba, differing from others in plumage and song, may be racially distinct; further investigation required. Monotypic.

**Distribution.** SE Peru in Cuzco (Vilcabamba Mts and Vilcanota Mts).



**Descriptive notes.** 17.5 cm; male 73-80 g, female 76-79 g. Adult is bright dark rufous above, browner on back; throat and belly white (washed with pale yellow in N Cordillera Vilcabamba); breast side and flanks rufous-brown, washed with olive on flanks, rufous-brown usually extending to form ragged breastband spotted or mottled with white; iris medium brown; bill black; tarsus slaty to blue-grey. Juvenile not known. **VOICE.** Song 1-1 seconds long, given at intervals of 5-8 seconds for a minute or more, 3 (occasionally 4) similar pure whistles, the first at 1.8 kHz, followed by short pause, the last 2 weaker and alike, at

1.6-1.7 kHz; in N Cordillera Vilcabamba song 1.6 seconds long, of 4 (rarely, 5) notes, slightly higher-pitched, first note at 2 kHz, last 3 notes at 2-1 kHz and louder than the first. Call an explosive, loud, mellow downslurred whistle.

**Habitat.** Floor and lower undergrowth of humid montane forest and secondary woodland, especially tangled borders and bamboo stands; at 2150-3000 m.

**Food and Feeding.** Food includes beetles, ants, spiders; bits of gravel and plant matter also found in some stomachs. Hops like a thrush (Turdidae), and stops to listen with head cocked slightly to one side. Food picked from fallen leaves, mosses and mud.

**Breeding.** No information. Sings from horizontal perch in dense tangles within 2 m of ground, mainly early and late in day.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Bolivian and Peruvian Upper Yungas EBA. Considered uncommon to locally fairly common. Occurs in Manu National Park and Biosphere Reserve, Apurimac Reserved Zone and Machu Picchu Historical Sanctuary.

**Bibliography.** Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Meyer de Schauensee (1982), Parker & O'Neill (1980), Parker *et al.* (1982), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Walker (2001), Zimmer (1934a).

## 40. Bay Antpitta

### *Grallaria capitalis*

**French:** Grallaire châtaîne

**German:** Rostfarbene Ameisenpitta

**Spanish:** Tororoí Bayo

**Taxonomy.** *Grallaria capitalis* Chapman, 1926, Rumicruz, 9700 feet [c. 2960 m], Junin, Peru.

Forms a superspecies with *G. erythroleuca*, *G. przewalskii*, *G. hypoleuca* and *G. flavotincta*; on different occasions this species variously been treated as a race of one or of other of those species. Monotypic.

**Distribution.** C Peru in Huánuco, Pasco and Junin.



**Descriptive notes.** 17 cm; male 72-77 g, one female 72 g. Adult has dusky brown crown, chestnut upperparts; head side and entire underparts rufous, except for white or buff centre of belly; iris dark brown; bill blue-grey, culmen blackish; tarsus blue-grey. Juvenile is blackish above, crown spotted, back barred with buff, throat and breast blackish, lower breast and sides barred buffish and blackish, belly buffy. **VOICE.** Song 1 second long, given at intervals of 6-10 seconds for a minute or more, consists of 4 whistles, the first of which is delivered at 1.9-2 kHz, followed by a short pause, the last 3 given at 1.7-1.8 kHz, weaker,

with the final note slightly rising.

**Habitat.** Floor and lower undergrowth of humid montane forest and second-growth woodland, especially borders and treefalls; often in areas of bamboo. At 2600-3000 m, occasionally down to 1525 m.

**Food and Feeding.** One stomach held insects and a snail. Foraging behaviour not fully documented.

**Breeding.** No information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in North-east Peruvian Cordilleras EBA. Fairly common within restricted range. Occurs near, and presumably in, Yanachaga Chemillén National Park.

**Bibliography.** Fjeldså & Krabbe (1990), Meyer de Schauensee (1982), Parker & O'Neill (1980), Parker *et al.* (1982), Ridgely & Tudor (1994), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wheatley (1994).

## 41. Rusty-tinged Antpitta

### *Grallaria przewalskii*

**French:** Grallaire de Przewalski

**German:** Taczanowskiameisenpitta

**Spanish:** Tororoí Rojizo

**Other common names:** Przewalski's/Rusty-winged Antpitta

**Taxonomy.** *Grallaria przewalskii* Taczanowski, 1882, Ray-Urmana, 8000 feet [c. 2440 m], above Chirimoto, Huayabamba Valley, north Peru.

Forms a superspecies with *G. erythroleuca*, *G. capitalis*, *G. hypoleuca* and *G. flavotincta*; formerly treated as a race of one or other of those. Monotypic.

**Distribution.** C Andes of Peru in S Amazonas, San Martin and La Libertad.



**Descriptive notes.** 17 cm; male 60-5-74 g, one female 61 g. Adult has pale grey forehead grading into blackish-tinged grey crown, whitish eyering; dark rufous-brown above, side of neck rufous-chestnut; chin whitish, throat rufous, breast, flanks and vent rufous-brown, belly greyish with whitish centre; iris brown; bill black; tarsus blue-grey. Juvenile has white throat, black breast, rest of plumage dark, finely barred with buff. **VOICE.** Song 1.2-1.5 seconds long, given at intervals of 11-12 seconds, series of 3 whistles at 1.5-1.8 kHz, the first weakest and followed by slight pause, middle note at a bit or very slightly higher

pitch but loud, final note higher-pitched, slightly rising, sometimes a bit louder than middle note; somewhat like song of *G. ruficapilla*, but without drop from first to second note, and each note more even in pitch.

**Habitat.** Floor and lower understorey of humid montane forest, at 1700-2750 m; most common above 2150 m.

**Food and Feeding.** One stomach held insects, another contained "small seeds". Behaviour not documented.

**Breeding.** No information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in North-east Peruvian Cordilleras EBA. Fairly common within its restricted range. Occurs in Río Abiseo National Park.

**Bibliography.** Barnes *et al.* (1997), Cory & Hellmayr (1924), Davies *et al.* (1994, 1997), Fjeldså & Krabbe (1990), Kirwan & Hornbuckle (1997c), Meyer de Schauensee (1982), Parker & O'Neill (1980), Parker *et al.* (1982), Ridgely & Tudor (1994), Schulenberg & Williams (1982), Stotz *et al.* (1996).

## 42. White-bellied Antpitta

### *Grallaria hypoleuca*

**French:** Grallaire à ventre blanc

**German:** Blassbauch-Ameisenpitta

**Spanish:** Tororoí Ventriblanco

**Other common names:** Bay-backed Antpitta

**Taxonomy.** *Grallaria hypoleuca* P. L. Slater, 1855, Santa Fe de Bogotá, Colombia.

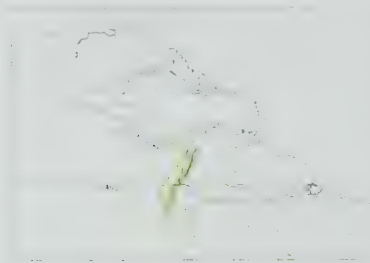
Forms a superspecies with *G. erythroleuca*, *G. capitalis*, *G. przewalskii* and *G. flavotincta*, and in the past was commonly treated as conspecific with last-mentioned of those. Two subspecies recognized.



**Subspecies and Distribution**

*G. h. hypoleuca* P. L. Slater, 1855 - Colombia in C Andes (Antioquia) and on W slope of E Andes (from Santander S to Cundinamarca).

*G. h. castanea* Chapman, 1923 - S Colombia (S from head of Magdalena Valley) and E Ecuador S to N Peru.



**Descriptive notes.** 17 cm; three males 62-69 g, one female (with 8-3-g egg in oviduct) 82 g. Adult has dark grey lores, dull rufescent-brown crown; nape, ear-coverts and neck side rufous-chestnut; upperparts brown, slightly rufescent; throat and centre of belly white, side of breast to flanks rufous-chestnut, with rest of underparts pale grey; iris brown; bill blackish-grey; tarsus blue-grey. Juvenile undescribed. Race *castanea* is considerably smaller than nominate, with chestnut-brown upperparts. **Voice.** Song 1-1-1-4 seconds long, given at intervals of 7-15 or more seconds, 3 whistles, the first weaker, at 2-0-2-2 kHz, followed by short

pause, the last 2 higher, at 2-1-2-3 kHz, final one often slightly higher-pitched. Call a single whistle at same pitch as song, sometimes repeated in manner recalling a pygmy-owl (*Glaucidium*).

**Habitat.** Inhabits floor and lower understorey of humid montane forest, showing particular predilection for tangled edges of forest, treefalls and landslides, and forest borders, as well as second growth; sometimes present in areas with degraded and fragmented habitat. Occurs at elevations of 1400-2300 m.

**Food and Feeding.** Virtually nothing known: one stomach held insects. Foraging behaviour not fully documented.

**Breeding.** Specimens in breeding condition in Mar-Sept in Colombia (C & E Andes). Sings from perch within 2 m of ground. Eggs 29-8 × 24-5 mm.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common; uncommon in Peru. Common in Cueva de los Guácharos National Park, in S Colombia. In Ecuador, occurs in Cayambe-Coca Ecological Reserve, and Gran Sumaco, Sangay and Podocarpus National Parks. The fact that this species persists in degraded and fragmented habitats suggests that it may be fairly adaptable.

**Bibliography.** Butler (1979), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hilty & Brown (1986), Krabbe, Agro *et al.* (1999), Meyer de Schauensee (1982), Parker & O'Neill (1980), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Ridgely & Gaulin (1980), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Schönwetter (1979), Schulenberg & Awbrey (1997a), Stotz *et al.* (1996), Taylor (1995).

**43. Yellow-breasted Antpitta***Grallaria flavotincta*

**French:** Grallaire à poitrine jaune

**German:** Gelbbrust-Ameisenpitta

**Spanish:** Tororoi Pechiamarillo

**Taxonomy.** *Grallaria flavotincta* P. L. Slater, 1877, Frontino, Antioquia, Colombia.

Forms a superspecies with *G. erythroleuca*, *G. capitalis*, *G. przewalskii* and *G. hypoleuca*; formerly considered conspecific with last of those. Monotypic.

**Distribution.** Pacific slope in Colombia and NW Ecuador.



**Descriptive notes.** 17 cm. Adult has grey lores, chestnut-brown head side and upperparts; creamy white below, sometimes tinged pale grey on breast and side of belly, variably mottled with chestnut-brown on breast and sides; iris dark brown; bill black; tarsus bluish-grey. Differs from *G. hypoleuca* in having 10 rectrices, rather than 12, and generally in having more chestnut below. Juvenile undescribed. **Voice.** Song 1-1 seconds long, given at intervals of 13-22 seconds for minutes at a time, 3 whistles at 2-2-2 kHz, first note weaker and shorter, last slightly lower-pitched and rising; may respond to playback of song with drawn-out shrill and piercing "eeeeeeeeee-yk".

**Habitat.** Floor and lower understorey of humid and, especially, wet montane forest and forest borders, often in ravines, steep hillsides and vicinity of streams, sometimes in clumps of bamboo; at 1300-2350 m. In W Colombia, replaced sharply at lower levels by *G. haplonota*.

**Food and Feeding.** Diet not documented. Usually solitary. Hops on the forest floor, pausing to probe into litter or to flick aside leaves.

**Breeding.** Specimens in breeding condition in Jun in Colombia (N end of W Andes). Sings from concealed perch near ground. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Chocó EBA. Generally rare to locally uncommon. In NW Ecuador, fairly common at 1900-2200 m in Maquipucuna Reserve (Pichincha) and the small (c. 15 km<sup>2</sup>) Cerro Golondrina Reserve (Carchi). Apparently tolerates less habitat disturbance than its close relatives, and perhaps merits status of Near-threatened.

**Bibliography.** Best *et al.* (1997), Cory & Hellmayr (1924), Donegan & Dávalos (1999), Fjeldså & Krabbe (1990), Freile (2000), Hilty & Brown (1986), Meyer de Schauensee (1982), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Salaman (1994), Stotz *et al.* (1996), Taylor (1995).











## 44. Chestnut-naped Antpitta

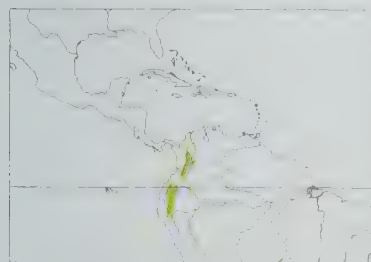
### *Grallaria nuchalis*

**French:** Grallaire à nuque rousse **Spanish:** Tororoi Nuquicastaño  
**German:** Rostnackel-Ameisenpitta  
**Other common names:** Russet-capped Antpitta (*ruficeps*)

**Taxonomy.** *Grallaria nuchalis* P. L. Selater, 1860. Río Napo, Ecuador. Possibly a sister-species of *G. carrikeri*; related also to *G. ridgelyi*. Vocal differences of race *obsoleta* suggest that it may be a separate species. Three subspecies recognized.

#### Subspecies and Distribution.

*G. n. ruficeps* P. L. Selater, 1874 - Colombia in C Andes and on W slope of E Andes in Cundinamarca.  
*G. n. obsoleta* Chubb, 1916 - W Ecuador.  
*G. n. nuchalis* P. L. Selater, 1860 - E Ecuador and adjacent N Peru.



**Descriptive notes.** 19-5-20 cm; three males 111-122 g, three females 104-122 g. Adult has grey lores, dark chestnut crown, rufous-chestnut rear crown, nape and side of head; upperparts brown, primaries tawny-brown; underparts dusky brown to ashy grey, tinged ashy on abdomen; iris grey, with small patch of whitish orbital skin to rear of eye; bill black; tarsus pale blue-grey. Juvenile is plain light brown above, darkest on crown, light buffy brown below, darkest on breast, with bare parts of face bright orange. Race *ruficeps* has crown, nape and side of head brighter rufous-chestnut, underparts grey; *obsoleta* has brown crown, with only nape rufous-chestnut, upperparts olivaceous brown, lores and eyering blackish, auriculars chestnut, underparts blackish-grey. **VOICE.** Song (*nuchalis*) 2.3-4.1 seconds long, at intervals of 6-15 seconds for up to several minutes, a series of 7-13 notes mostly at constant pitch of 1.9-2.2 kHz and slowly accelerating pace, but over last few notes accelerating quickly and rising to 2.1-2.4 kHz; introductory note at similar pitch c. 1 second before series presumably a well-synchronized female vocalization; also possibly by female is a descending series 4-7 seconds long of 6-9 wheezy notes at 5.5-4.9 kHz at steady pace. Song of *obsoleta* 3-4 seconds long, at constant pitch of 1.8-1.9 kHz (last note occasionally slightly higher), 1-3 trisyllabic stutters becoming steadily paced series, also usually preceded by single (probably female) note; presumed female may give 12-second, steadily paced, descending series of 14 notes at 6-4-6 kHz.

**Habitat.** Dense bamboo thickets in humid montane forest, at 1900-3150 m.  
**Food and Feeding.** Stomachs of four specimens held ants, beetles, other insect parts, and a millipede (Diplopoda). Hops on ground as other *Grallaria*, usually within dense bamboo thickets, but venturing into semi-open at early dawn or during overcast or rainy weather.  
**Breeding.** Specimen in breeding condition and juvenile in Jan in Colombia (SE Antioquia). Sings from low hidden perch, mainly at dawn and dusk. Eggs 36.3-36.8 × 26.9-27.9 mm. Study on W slope of C Andes of Colombia gave estimated density of c. 0.5 individuals/ha, and estimated territory size of 9.3 ha. No other information available.

**Movements.** Presumably sedentary.  
**Status and Conservation.** Not globally threatened. Generally uncommon; locally fairly common, e.g. in Peru. Common in Podocarpus National Park, in Ecuador, and occurs in several other protected areas.

**Bibliography.** Bloch *et al.* (1991), Butler (1979), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hilty & Brown (1986), Kattan & Beltrán (1999, 2002), Krabbe, Agro *et al.* (1999), Meyer de Schauensee (1982), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Pfeiffer *et al.* (2001), Poulsen (1993), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Schönwetter (1979), Schulenberg & Williams (1982), Selater & Salvin (1879), Stotz *et al.* (1996), Strewe (2000b), Taylor (1995), Williams & Tobias (1994).

**Other common names:** Russet-capped Antpitta (*ruficeps*)

**French:** Grallaire de Carriker **Spanish:** Tororoi de Carriker  
**German:** Blassschnabel-Ameisenpitta

**Taxonomy.** *Grallaria carrikeri* Schulenberg and M. D. Williams, 1982. Cordillera de Colán, south-east of La Peca, 2450 m, Amazonas, Peru. Sometimes considered a sister-species of *G. nuchalis*, but possibly more closely related to *G. ridgelyi*. Monotypic.

**Distribution.** C Andes of Peru from S Amazonas S to La Libertad.

## 45. Pale-billed Antpitta

### *Grallaria carrikeri*

**French:** Grallaire de Carriker **Spanish:** Tororoi de Carriker  
**German:** Blassschnabel-Ameisenpitta

**Taxonomy.** *Grallaria carrikeri* Schulenberg and M. D. Williams, 1982. Cordillera de Colán, south-east of La Peca, 2450 m, Amazonas, Peru.

Sometimes considered a sister-species of *G. nuchalis*, but possibly more closely related to *G. ridgelyi*. Monotypic.

**Distribution.** C Andes of Peru from S Amazonas S to La Libertad.



**Descriptive notes.** 19 cm; male 96-124 g, female 97-112 g. Adult has black forecrown, auriculars, lores and malar region, blackish-brown crown and side of head, merging into olivaceous brown nape and back, feathers of back very narrowly tipped black; wings and tail dark chestnut; upper throat black, shading to blackish-grey on lower throat; breast and belly slate grey, feathers very narrowly tipped black, central belly paler (almost white), flanks and crissum buff-olive; iris crimson-red or pale reddish-brown; bill ivory-coloured; tarsus blue-grey. Juvenile has head, upper mantle and upper breast blackish-grey, rest of plumage dark grey and barred with cinnamon, obscurely on belly, centre of abdomen whitish. **VOICE.** Song 3 seconds long, given at intervals of 6-10 seconds, a series of 6 notes with slight pause after first and fifth, first note longest, second shortest and slightly lower-pitched.

**Habitat.** Dense bamboo thickets in humid montane forest, at 1900-3150 m.  
**Food and Feeding.** Stomachs of four specimens held ants, beetles, other insect parts, and a millipede (Diplopoda). Hops on ground as other *Grallaria*, usually within dense bamboo thickets, but venturing into semi-open at early dawn or during overcast or rainy weather.  
**Breeding.** Specimen in breeding condition and juvenile in Jan in Colombia (SE Antioquia). Sings from low hidden perch, mainly at dawn and dusk. Eggs 36.3-36.8 × 26.9-27.9 mm. Study on W slope of C Andes of Colombia gave estimated density of c. 0.5 individuals/ha, and estimated territory size of 9.3 ha. No other information available.

**Movements.** Presumably sedentary.  
**Status and Conservation.** Not globally threatened. Generally uncommon; locally fairly common, e.g. in Peru. Common in Podocarpus National Park, in Ecuador, and occurs in several other protected areas.

**Bibliography.** Bloch *et al.* (1991), Butler (1979), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hilty & Brown (1986), Kattan & Beltrán (1999, 2002), Krabbe, Agro *et al.* (1999), Meyer de Schauensee (1982), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Pfeiffer *et al.* (2001), Poulsen (1993), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Schönwetter (1979), Schulenberg & Williams (1982), Selater & Salvin (1879), Stotz *et al.* (1996), Strewe (2000b), Taylor (1995), Williams & Tobias (1994).

**Habitat.** Dense stands of bamboo and adjacent floor and undergrowth of humid montane forest, at 2350-2900 m.

**Food and Feeding.** Diet includes a variety of arthropods, especially caterpillars and beetles. Nestlings frequently fed earthworms. Foraging behaviour poorly documented; probably much as that of congeners.

**Breeding.** Nest with young in Oct and juveniles found in Aug, suggesting breeding during drier part of year. Single nest known, a shallow cup made of a few small sticks and a mass of decaying leaves, lined with rootlets, concealed among mosses, ferns and similar dead leaves on sloping trunk of partly fallen tree 3 m above steeply sloping ground (1.5 m from base of trunk). Estimated 7-day-old nestlings were still blind, and were brooded for 60% of day; tended by both parents, which apparently swallowed the chicks' faecal sacs.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in North-east Peruvian Cordilleras EBA. Generally uncommon, but locally fairly common, e.g. on Río Chido trail. Occurs in Río Abiseo National Park. Because of its small range, probably merits the conservation status of Near-threatened.

**Bibliography.** Begazo *et al.* (2001), Davies *et al.* (1994, 1997), Fjeldså & Krabbe (1990), Krabbe, Agro *et al.* (1999), Parker *et al.* (1982), Ridgely & Tudor (1994), Schulenberg & Williams (1982), Stattersfield *et al.* (1998), Stotz *et al.* (1996), Wiedenfeld (1982).

## 46. Jocotoco Antpitta

### *Grallaria ridgelyi*

**French:** Grallaire de Ridgely **German:** Zügfleck-Ameisenpitta **Spanish:** Tororoi Jocotoco

**Taxonomy.** *Grallaria ridgelyi* Krabbe *et al.*, 1999. Quebrada Honda, 2520 m, Zamora-Chinchipe, Ecuador.

Closest relative probably *G. carrikeri*; related also to sympatric *G. nuchalis*. Monotypic.

**Distribution.** S Ecuador in Zamora-Chinchipe; possible presence in immediately adjacent Peru requires investigation.



**Descriptive notes.** 20-22 cm; three males 176-204 g, two females 152 g and 182 g. Adult has cap and most of ear-coverts black, cheeks and lower lores with large glossy white patch of stiff, loose-barbed feathers covering base of bill; upperparts, wings and tail brownish-olive, nape and mantle washed black, flight-feathers edged chestnut; throat white, breast and belly whitish with variable light grey wash, side of breast to flanks and undertail-coverts brownish-olive, flanks suffused with grey, lower belly and crissum sometimes washed with pale pinkish-buff; iris dark red; bill black; tarsus bluish-grey. Juvenile unknown. **VOICE.** Male song a series of 6-10 or more identical notes at 0.4-0.6 kHz, given at intervals of 1-2 seconds, reminiscent of a barking dog, or Rufous-banded Owl (*Strix albitarsis*), or a *Pteroptochos* tapaculo. Call, by both sexes, a similarly pitched, softer, 2-noted "ho-co", second note usually lower (occasionally higher); alarm like call, but second note churred.

**Habitat.** Steep slopes in wet, mossy, montane forest 10 m tall admixed with at least two species of bamboo; at 2300-2680 m.

**Food and Feeding.** Food includes a variety of arthropods, including millipedes (Diplopoda), beetles, ants and larvae. Feeding has not been observed; remains within 4 m of ground.

**Breeding.** Male song apparently given only during Oct-Nov. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** **ENDANGERED.** Known range extremely small, perhaps 50 km<sup>2</sup>, but may occur outside this. Although a highly distinctive species, it was not discovered until 1997, indicating that it probably has very restricted distribution and possibly specific ecological requirements. Population density estimated at 6 pairs/km<sup>2</sup>. Occurs in 2 protected areas, Podocarpus National Park and the adjacent 10-km<sup>2</sup> Tapichalaca Reserve, the latter established with the particular aim of protecting this species. Threatened by logging and gold-mining activities within its range; these, along with human settlement, are major problems even in S part of Podocarpus National Park, the part inhabited by this antpitta. Fieldwork urgently needed to establish its total distribution, as well as its ecology and biology; effective protection of its habitat is also essential.

**Bibliography.** Anon. (1999c), Freile (2002), Koeppel (1998), Krabbe, Agro *et al.* (1999), Ridgely & Greenfield (2001), Rodner *et al.* (2000), Sornoza (2000), Stattersfield & Capper (2000).

## 47. Ochre-striped Antpitta

### *Grallaria dignissima*

**French:** Grallaire flammée **German:** Rostkehl-Ameisenpitta **Spanish:** Tororoi del Napo

**Other common names:** Stripe-sided Antpitta

**Taxonomy.** *Grallaria dignissima* P. L. Selater and Salvin, 1880. Sarayacu, Ecuador.

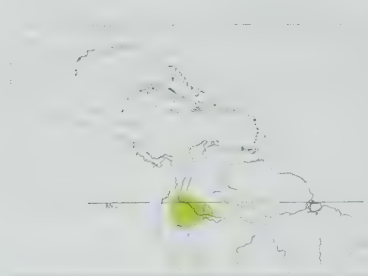
Previously placed with *G. eludens*, with which it forms a superspecies, in a separate genus *Thamnochorais*. Monotypic.

**Distribution.** SE Colombia (Putumayo, Amazonas), E Ecuador and NE Peru (N of R Marañón).

**Descriptive notes.** 19 cm; one male 110 g. Distinctive, with extensively reddish throat, feathers of lower back and flanks elongated. Adult has buff lores, buff-brown auriculars, grey-brown crown and nape; upperparts brown, lower back and rump with black-bordered white shaft streaks; throat and breast orange ochraceous, grading to white streaked black on lower underparts; iris dark brown; bill dark grey-brown, basal half of lower mandible pale; tarsus grey. Juvenile not described. **VOICE.** Song 1.1-1.2 seconds long, given at intervals of 10-13 seconds for several minutes, 2 whistles at 1.3-1.5 kHz, second note slightly louder, distinctly longer, and falling. Alarm a churr c. 1 second long of 25-30 notes at 0.9-1.4 kHz, volume increasing at start, decreasing at end, given at intervals of 3-4 seconds.

**Habitat.** Floor of humid *terra firme* forest, especially near streams in the higher areas; at c. 100-450 m.





**Food and Feeding.** Details of diet and feeding habits not recorded. Solitary or in pairs. Almost exclusively terrestrial. Walks, runs, hops, and bounds rapidly, pausing occasionally to sing.

**Breeding.** Sings from ground or low perch. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Upper Amazon-Napo Lowlands EBA. Generally rare to locally uncommon; rare in Peru. Occurs in Yasuni National Park and Cuyabeno Reserve, in Ecuador, where not uncommon along the Maxus road SE of Pompeya. Present at ACEER Lodge, near Iquitos, Peru.

**Bibliography.** Best *et al.* (1997), Butler (1979), Cory & Hellmayr (1924), Curson & Lowen (2000b), Hilty & Brown (1986), Krabbe, Agro *et al.* (1999), Meyer de Schauensee (1982), Pearman (1993b), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Stotz *et al.* (1996), Taylor (1995), Willis (1988b).

## 48. Elusive Antpitta

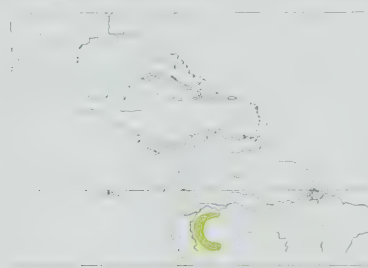
### *Grallaria eludens*

**French:** Grallaire secrète **German:** Fahlbrust-Ameisenpitta **Spanish:** Tororoí del Ucayali

**Taxonomy.** *Grallaria eludens* Lowery and O'Neill, 1969, vicinity of Balta, c. 300 m, Río Curanja, south-east Loreto, Peru.

Previously placed with *G. dignissima*, with which it forms a superspecies, in a separate genus *Thamnochoris*. Monotypic.

**Distribution.** E Peru (E of R Ucayali), and recently recorded in SW Amazonian Brazil in Amazonas (Benjamin Constante) and Acre (Caipora, on upper R Jurua).



**Descriptive notes.** 19 cm; three males 111-115 g. Adult has lores buff, crown, auriculars, nape and upperparts olivaceous brown; throat white; breast and upper belly buff with dusky streaks, rest of underparts white, broadly streaked black; iris brown; upper mandible dusky or horn-coloured, lower mandible pinkish-flesh; tarsus blue-grey. Juvenile not described. **VOICE.** Song c. 1.1-1.2 seconds long, consists of 2 whistles, very like that of *G. dignissima* but introductory note longer and second note beginning with abrupt rise. Alarm a churr, virtually identical to that of *G. dignissima*.

**Habitat.** Floor of humid *terra firme* upland forest with dense undergrowth, at c. 120-500 m.

**Food and Feeding.** Nothing recorded.

**Breeding.** Nothing known.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in South-east Peruvian Lowlands EBA. Local and uncommon. Recently recorded in Manu National Park and Biosphere Reserve; presence not confirmed in any other protected area. A virtually unknown species, requiring research on its ecology and biology. Degradation and destruction of forest within its range do not appear to be a major threat at present, but could become so; mining and other human activities possibly increasing, and forest being opened up locally for development.

**Bibliography.** Collar *et al.* (1994), Lowery & O'Neill (1969), Meyer de Schauensee (1982), Parker, Parker & Plenge (1982), Parker, Stotz & Fitzpatrick (1996), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stotz *et al.* (1996), Terborgh *et al.* (1984), Whittaker & Oren (1999), Willis (1987).

## 49. Chestnut-crowned Antpitta

### *Grallaria ruficapilla*

**French:** Grallaire à tête rousse **German:** Rostkappen-Ameisenpitta **Spanish:** Tororoí Compadre

**Taxonomy.** *Grallaria ruficapilla* Lafresnaye, 1842, Santa Fe de Bogotá, Colombia.

Was long considered conspecific with *G. watkinsi*, but distinct differences in voice, plumage and bare-part colours, and habitat; also, no intermediate specimens or songs known from area of range overlap in SW Ecuador. Racial affiliation of birds from Cerro Chinguela, in N Peru, uncertain; tentatively included in nominate race. Seven subspecies recognized.

**Subspecies and Distribution.**

*G. r. perijana* Phelps, Sr. & Gilliard, 1940 - Perijá Mts on N Colombia-W Venezuela border.

*G. r. nigrolineata* P. L. Slater, 1890 - Andes of Venezuela from N Trujillo S to NE Táchira.

*G. r. avilae* Hellmayr & Seilern, 1914 - N Venezuelan Andes (S Lara) and coastal mountains (E to Miranda).

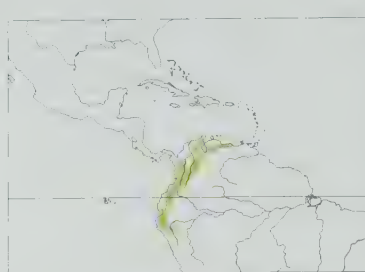
*G. r. ruficapilla* Lafresnaye, 1842 - W, C & E Andes of Colombia S to CW & SE Ecuador, probably also including birds from Cerro Chinguela, in N Peru.

*G. r. connectens* Chapman, 1923 - SW Ecuador in El Oro and Loja.

*G. r. albiloris* Taczanowski, 1880 - Pacific slope of NW Peru S to Lambayeque (possibly S to Ancash).

*G. r. interior* J. T. Zimmer, 1934 - W slope of C Andes of Peru in Amazonas and San Martín.

**Descriptive notes.** 18.5-19 cm; male 70-98 g, three females 70-92 g. Adult has crown, head side, nape and moustache rufous; upperparts olivaceous; underparts white, streaked olivaceous and blackish on sides and sometimes faintly on breast, feathers of breast with some ochraceous edges; iris dark brown; bill black, base of lower mandible grey; tarsus blue-grey. Juvenile is pale cinnamon-rufous to rufous, barred dark brown above, throat white, breast like back, belly buff with whitish central area. Race *nigrolineata* similar, but ventral streaking broader and darker, and ochraceous edgings to chest feathers are reduced or absent; *avilae* has darker rufous forehead, slightly more ochraceous edges below; *perijana* resembles previous, but fewer and narrower streaks below and more suffused with bright ochraceous orange, especially on chest, and extending to abdomen and



a loud, sharply descending whistle at 2.6-1.4 kHz; call of *interior* (always?) shorter (0.2 seconds) and lower (1.8-1.4 kHz).

**Habitat.** Forest borders, forest clearings, second growth, bamboo stands; semi-humid groves and thickets in open, disturbed country, also bushy patches and hedgerows. Also in humid montane forest, frequently so in W Ecuador and Colombia, less commonly elsewhere. At 1200-3600 m. In Venezuelan Andes, apparently replaced at higher elevations by *G. griseonucha*.

**Food and Feeding.** Diet includes spiders, caterpillars and ground-dwelling insects. Hops on ground, usually under cover; occasionally in the open along edges of vegetation, especially in early morning.

**Breeding.** Breeds mainly in May-Aug in coastal Venezuela; in Colombia, specimens in breeding condition in Apr-Sept in N (N end of W Andes, and Perijá Mts), in Mar farther S (Valle). Sings from ground or low perch. Nest a mass of dead leaves, roots and moss, lined with roots and fibres, placed "some height above ground". Clutch 2 eggs, 30.31-4 × 25.26-4 mm (*ruficapilla*), 27.6-28.9 × 24.1-24.9 mm (*nigrolineata*), 29.30-6 × 24.25-2 mm (*albiloris*); reported clutch of 3 eggs (abnormally marked) presumed erroneous. Study on W slope of C Andes of Colombia gave estimated density of c. 0.4 individuals/ha, and estimated territory size of 1.9 ha.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Fairly common to common and widespread in Peru, Colombia, Venezuela and W Ecuador. Occurs commonly in several protected areas, including Macarao, Guaramacal and Sierra Nevada National Parks, in Venezuela, Munchique National Park and La Planada Nature Reserve, in Colombia, and Podocarpus National Park, in Ecuador. On E slope of Andes of Ecuador, it is mostly confined to edges of man-made clearings; it seems likely, therefore, that it is expanding its distribution in that region. Tolerates disturbance, and able to survive in fragmented and patchy habitat.

**Bibliography.** Bloch *et al.* (1991), Butler (1979), Cory & Hellmayr (1924), Fjeldsá & Krabbe (1990), Hilty (2003a), Hilty & Brown (1986), Kattan & Beltrán (1999, 2002), Krabbe, Agro *et al.* (1999), Krabbe, Skov *et al.* (1998), Meyer de Schauensee & Phelps (1978), Miller (1963), Parker *et al.* (1982), Pfeifer *et al.* (2001), Ridgely & Gaulin (1980), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Schäfer (2002), Schönwetter (1979), Schulenberg & Williams (1982), Slater & Salvin (1879), Stotz *et al.* (1996), Welford (2000), Wiedenfeld (1982), Williams & Tobias (1994), Zimmer (1934a).

## 50. Watkins's Antpitta

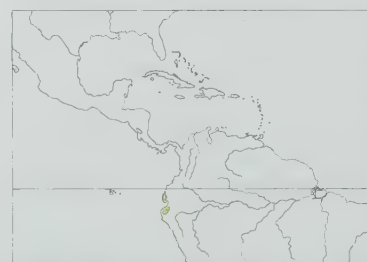
### *Grallaria watkinsi*

**French:** Grallaire de Watkins **German:** Buschlandameisenpitta **Spanish:** Tororoí Matorralero  
**Other common names:** Scrub Antpitta

**Taxonomy.** *Grallaria watkinsi* Chapman, 1919, Milagros, 2200 feet [c. 670 m], Loja, Ecuador.

Was for many years treated as a race of *G. ruficapilla*, but differs markedly in voice, plumage, bare-part colours and habitat; in addition, no intermediate specimens or songs are known from area of range overlap in SW Ecuador. Exact location of type locality uncertain; originally said to be in Piura (Peru) but subsequently considered more likely to be located in Ecuador. Monotypic.

**Distribution.** Coastal mountains of W & SW Ecuador (SW Manabí and W Guayas, and El Oro and Loja) and immediately adjacent NW Peru (Tumbes, presumably also Piura).



**Descriptive notes.** 18 cm; male 60-84 g, two females 58 g and 62 g. Adult has crown and nape pale rufous with narrow whitish shaft streaks, lores and eyering light buffy to white, auriculars buff with olive streaks; upperparts pale olivaceous, back narrowly streaked whitish; throat white, remaining underparts white with broad olivaceous streaking; iris dark brown; upper mandible blackish, lower pale pinkish-grey; tarsus pinkish to pale horn. Juvenile not described. **VOICE.** Song 2.1-3.4 seconds long, at intervals of 4-15 seconds, a series of 4-9 similar notes at 1.6-1.8 kHz at steady pace of 2.3-2.8 per second, immediately followed by sharp whistle rising from 1.4 to 2.6 kHz. Call, given at intervals of 2-4 seconds late in morning outside breeding season, like last note or last 3 notes of song, but more rapid.

**Habitat.** Dry and semi-deciduous forest and second growth, including fairly disturbed areas. At 50-1800 m; 600-900 m in Peru.

**Food and Feeding.** Details of diet not documented. Hops on the ground, usually keeping under cover; once observed foraging at edge of a clearing, seemingly associated with mixed flock of brush-finches (*Atlapetes*) and seedeaters (*Sporophila*).

**Breeding.** Song recorded in Jul, and also (Peru) in late Aug; apparently sings only during breeding season, both at very early dawn and at late dusk, either from ground or from low branch. No other information available.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Tumbesian Region EBA. Fairly common but apparently rather local; probably merits conservation status of Near-threatened. Occurs in Machalilla National Park, in Ecuador. In Peru, fairly common in Tumbes National Reserve, and occurs also in Cerros de Amotape National Park and El Angolo Hunting Reserve.

**Bibliography.** Best & Clarke (1991), Best & Kessler (1995), Bloch *et al.* (1991), Cory & Hellmayr (1924), Drewitt & Brown (2000), Fjeldsá & Krabbe (1990), Krabbe (1992b), Krabbe, Agro *et al.* (1999), Parker *et al.* (1995), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Stotz *et al.* (1996), Taylor (1995), Walker (2002), Whiffin & Sadgrove (2000), Williams & Tobias (1994), Zimmer (1934a).



## 51. Grey-naped Antpitta

### *Grallaria griseonucha*

French: Grallaire à nuque grise

German: Graunacken-Ameisenpitta

Spanish: Tororoi Nuquigris

**Taxonomy.** *Grallaria griseonucha* P. L. Sclater and Salvin, 1871, Páramo de Culata, Andes of Mérida, Venezuela.

Two subspecies recognized.

**Subspecies and Distribution.**

*G. g. griseonucha* P. L. Sclater & Salvin, 1871 - Andes of Venezuela in C Mérida and E Trujillo.  
*G. g. tachirae* J. T. Zimmer & Phelps, Sr., 1945 - Andes of Venezuela in NE Táchira (Boca de Monte).



**Descriptive notes.** 16 cm. Adult has dark brown crown, slate-grey nape and side of hindcrown; upperparts, wings and tail dark reddish-brown; side of head and most of underparts rufous-chestnut, centre of belly paler and tinged olivaceous; iris dark; bill blackish to dark grey; tarsus grey. Juvenile has pale shaft streaks on nape, back and underparts. Race *tachirae* is brownish-olive above, throat paler than rest of underside. **Voice.** Song 1-1.8 seconds long, given at intervals of 7-11 seconds, a series of 10-16 similar hollow notes at 1-1.2 kHz, volume gradually increasing to near end, then fading on last note, pitch even or falling

slightly through first half of series, rising through second half. Call 0.7-0.8 seconds long, given every 2-4 seconds for several minutes, 2-3 notes at 1-1 kHz, first note usually weakest, often with slight pause before last note. Sings all year round, especially Jun-Feb; often sings for extended periods on overcast days.

**Habitat.** Floor and lower undergrowth of humid montane forest, at 2300-2800 m; generally found in dense vegetation, e.g. abundant secondary growth in forest gaps; seems to be particularly associated with dense stands of bamboo (*Chusquea*). Found at higher elevations than *G. ruficapilla*, which it appears to replace.

**Food and Feeding.** Few details available. Hops on ground; behaviour apparently as for other *Grallaria*.

**Breeding.** No information. Based on frequency of vocalizations, season may coincide with start of rains (May) or when they finish (Oct-Nov).

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Cordillera de Mérida EBA. Generally uncommon, but locally quite common to common. Occurs in Guaramacal National Park, and probably also in Sierra Nevada and Sierra de la Culata National Parks. A poorly known species; field study required in order to elucidate its ecology and biology.

**Bibliography.** Azeano (2003), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hilty (2003a), Krabbe & Coopmans (2000), Meyer de Schauensee (1982), Meyer de Schauensee & Phelps (1978), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

## 52. Rufous Antpitta

### *Grallaria rufula*

French: Grallaire rousse

German: Einfarb-Ameisenpitta

Spanish: Tororoi Rufo

**Taxonomy.** *Grallaria rufula* Lafresnaye, 1843, Bogotá, Colombia.

Forms a superspecies with *G. blakei*. Considerable geographical differences in vocalizations, including within nominate race and, possibly, *obscura*, indicate that some races may be better treated as full species; taxonomy requires further study. Seven subspecies currently recognized.

**Subspecies and Distribution.**

*G. r. spatiator* Bangs, 1898 - N Colombia in Santa Marta Mts.

*G. r. saltuensis* Wetmore, 1946 - Perijá Mts on Venezuela-Colombia border.

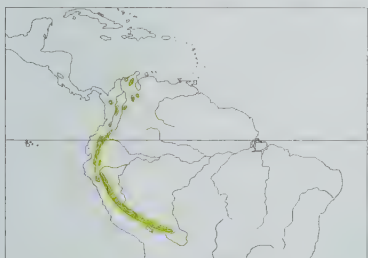
*G. r. rufula* Lafresnaye, 1843 - SW Venezuela (E & W Táchira) and Andes of Colombia (E, N part of W, and middle C ranges) S to extreme N Peru.

*G. r. cajamarcae* (Chapman, 1927) - W Andes of Peru in S Cajamarca.

*G. r. obscura* Berlepsch & Stolzmann, 1896 - C Andes of Peru (S to Junin).

*G. r. occabambae* (Chapman, 1923) - SE Peru (Cuzco) SE to W Bolivia (W La Paz).

*G. r. cochabambae* Bond & Meyer de Schauensee, 1940 - C Bolivia (N Cochabamba, possibly also W to C La Paz).



**Descriptive notes.** 14.5-15 cm; male 35-46 g, female 39-46 g, unsexed average 45.5 g. Adult is rufous-brown above; head side and underparts rufous, flanks dark grey-brown, belly centre dull light rufous with paler feather tips; abdomen buff-white to white, dark bases more or less showing through; undertail-coverts variable, from whitish to buffy or dark brown; iris dark brown; bill blackish, base of lower mandible sometimes paler; tarsus dull blue-grey, grey or pinkish-grey. Juvenile has back barred buff, crown and underparts streaked whitish. Race *spatiator* resembles nominate, but abdomen dirty white instead of buffy; *saltuensis* is

much duller, has contrasting clay-coloured feather tips above, much paler, whitish-grey, below, with slender tarsus; *cajamarcae* has whitish lower underparts; *obscura* is rather dull and uniform; *occabambae* is more olivaceous, lighter below; *cochabambae* is like previous, but even duller. **Voice.** Song of *spatiator* a ringing 3-second trill of c. 30 notes, even pace of 9.5-10 per second, falling gradually from 4.5-4.8 kHz to 3.2-3.4 kHz. Song of *rufula* 5.6-7.3 seconds, given only 1-3

times during entire morning, introductory note at 2.3-2.9 kHz, followed by accelerating series 2.7-3.9 seconds long of 23-34 notes that begin slightly lower and fall 0.1-0.2 kHz, terminated by 2-6 progressively shorter bursts each of a loud note followed by 2-6 accelerated notes; frequently heard call (or alternative song) resembles a terminal burst, is 0.6-0.7 seconds long, every 2.5-4 seconds for several minutes, single loud note, then short pause, then 4-5 slightly lower-pitched, descending, accelerated notes; less often heard call a ringing trill 1.5-2.2 seconds long, 16-24 notes at 2.5-3 kHz, given a few times at intervals of 4-10 seconds, much like song of *G. blakei* but higher-pitched. Song of *obscura* 0.9 seconds, at intervals of 3-6 seconds, introductory note (sometimes omitted) followed by accelerated series of c. 30 notes all between 2.2 and 2.6 kHz (*rufula* rarely gives vocalization of same length and pitch, but only 16 notes); also evenly paced trill 3.5-3.8 seconds long of 31-35 notes at 2.2-2.4 kHz, and series 1-2 seconds long of 4-7 "police whistles" at 3 kHz repeated at intervals of 4-7 seconds. Race *occabambae* song 4.4-4.5 seconds, evenly paced trill of c. 25 notes, at first falling from 2.2 to 2 kHz, then even, at very end rising to 2.4 kHz; also 2-note call 0.3-0.4 seconds long, at intervals of 2-8 seconds, in Cuzco notes at 2-2.2 kHz, soft, of same length, first slightly weaker, elsewhere sharper, first note short, in La Paz at 2.4-2.6 kHz. Song of *cochabambae* 2.5-3.3 seconds, evenly paced trill of 25-35 notes at 2.6-2.7 kHz, slight fall at beginning and rise at end; 2-note call like sharp version of previous race, but at 2.2-2.2 kHz.

**Habitat.** Floor and lower parts of understorey in stands of bamboo or cane in humid montane forest and forest borders; often in boggy areas, seepage zones, and near streams. At 2300-3650 m. Replaced at lower levels in Peru by *G. blakei*.

**Food and Feeding.** Two stomachs held small insects and caterpillars. Hops unobtrusively on mossy ground; occasionally into the open on landslides and mossy clearings at dawn and dusk, or when weather is foggy. Sometimes perches in shrubs or bushes, especially when disturbed.

**Breeding.** Eggs in Mar-Apr and specimens in breeding condition in Mar in E Ecuador; specimens in breeding condition in Mar-May in N Colombia (Santa Marta Mts, Perijá Mts) and in Sept-Oct in N Peru. Single nest documented, a cup made entirely of thin yellowish grass stems set upon dark, damp leaves, lined with mammal hair, and placed c. 0.75 m above ground in shallow hollow on side of a stump. Clutch 1 egg.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon to fairly common; locally common in areas with large stands of *Chusquea* bamboo. Most races occur in several sizeable protected areas; *cajamarcae*, however, does not and could be at risk. Race *occabambae* occurs in Machu Picchu Historical Sanctuary, in Peru. Presence or otherwise of *saltuensis* in the Iroka and Sokorpa Reserves in Perijá Mts is not known; further fieldwork required.

**Bibliography.** Bloch *et al.* (1991), Butler (1979), Cory & Hellmayr (1924), Cresswell, Hughes *et al.* (1999), Cresswell, Mellanby *et al.* (1999), Fjeldså & Krabbe (1990), Hilty (2003a), Hilty & Brown (1986), Krabbe, Agro *et al.* (1999), Meyer de Schauensee & Phelps (1978), Parker & O'Neill (1980), Parker *et al.* (1982), Pfeifer *et al.* (2001), Poulsen (1996), Remsen (1985), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Schulenberg & Williams (1982), Stotz *et al.* (1996), Strewé (2000b), Taylor (1995), Todd & Carriker (1922b), Walker (2001), Whitney (1992b), Williams & Tobias (1994), Zimmer (1930).

## 53. Chestnut Antpitta

### *Grallaria blakei*

French: Grallaire de Blake

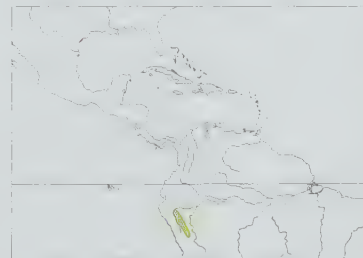
German: Kastanienbraune Ameisenpitta

Spanish: Tororoi Castaño

**Taxonomy.** *Grallaria blakei* Graves, 1987, east slope of Carpath Mountains near the Central Highway, c. 2400 m, Huánuco, Peru.

Forms a superspecies with *G. rufula*. No geographical races recognized, but birds from Pasco possibly merit subspecific rank on basis of plumage differences. Monotypic.

**Distribution.** C Andes of Peru from C Amazonas and NW San Martín through Huánuco to Pasco, and possibly NE Ayacucho.



**Descriptive notes.** 15 cm; two males 38 g and 40 g, female 39.5-47 g. Adult is chestnut above, brightening to burnt sienna on face, throat and breast, and merging into cinnamon-brown and then plain brown on flanks, thighs and undertail; centre of lower belly light buffy grey; feathers of belly with indistinct darker grey bars in Huánuco, less distinct bars in Amazonas, and unbarred in Pasco; iris brown; bill black; tarsus slate-coloured. Differs from *G. rufula* in pale lower underparts without dark bases, broader bill, thicker tarsus. Juvenile not described. **Voice.** Song 3.2-4.6 seconds long, given at intervals of 4-11 seconds, an evenly pitched ringing series

of 38-52 notes at 2 kHz, at even pace of 11-12 per second. Alarm call like song but shorter, 1.8-2.2 seconds, given at intervals of 1-3 seconds; call a brief "weeo"; also possibly by this species, a 1-second evenly pitched "ween" at 2.9 kHz, repeated after 10-20 seconds.

**Habitat.** Ground and near ground in stands of bamboo and other dense undergrowth in humid montane forest and secondary woodland; at 1700-3100 m, mainly above 2100 m. Replaced at higher elevations by *G. rufula*.

**Food and Feeding.** No documented information. Behaviour reported to resemble that of *G. rufula*.

**Breeding.** No confirmed data. Probably nests from Dec to Apr or May.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in North-east Peruvian Cordilleras EBA. Generally rare, though locally not uncommon, e.g. at Abra Patricia. Thought to have declined owing to loss of habitat; in some parts of range (e.g. Cordillera de Colán), extensive deforestation has taken place and continues at rapid rate. Species is, however, poorly known; although restricted to a relatively narrow elevational band, it may not be truly local and its range could conceivably encompass large, remote and uninhabited areas. Presumed to occur in Río Abiseo and Yanachaga Chemillén National Parks.

**Bibliography.** Barnes *et al.* (1997), Collar *et al.* (1994), Davies *et al.* (1994, 1997), Fjeldså & Krabbe (1990), Graves (1987), Hornbuckle (1999), Kirwan & Hornbuckle (1997c), Krabbe, Agro *et al.* (1999), Stattersfield & Capper (2000), Stotz *et al.* (1996), Vuilleumier *et al.* (1992).



PLATE 76

inches 2  
cm 5





# Genus *GRALLARICULA* P. L. Sclater, 1858

## 54. Hooded Antpitta

### *Grallaricula cucullata*

**French:** Grallaire à capuchon **German:** Rotkopf-Ameisenpitta **Spanish:** Ponchito Encapuchado

**Taxonomy.** *Conopophaga cucullata* P. L. Sclater, 1856, Bogotá, Colombia. Two subspecies recognized.

#### Subspecies and Distribution.

*G. c. venezuelana* Phelps, Sr. & Phelps, Jr. 1956 - NW Venezuela (SW Táchira and extreme W Apure) and C Colombia (E Cundinamarca).

*G. c. cucullata* (P. L. Sclater, 1856) - Colombia in W Andes (W of Cali), on W slope of C range (in Antioquia, Risaralda and Valle del Cauca), and on W slope of E chain (in Huila at head of Magdalena Valley; presumably also farther N).



**Descriptive notes.** 10 cm. Adult has bright orange-rufous head and throat; olive-brown upperparts and tail, brown wings; narrow white crescent across lower throat; breast and belly pale grey, centre of lower breast and centre of belly white; iris dark brown; bill orange; tarsus greyish. Juvenile not described. Race *venezuelana* is similar, but with breast more olivaceous, centre of belly pale yellowish, rather than white. **VOICE.** Unknown.

**Habitat.** Undergrowth of dense humid montane forest; at 1800-2135 m, possibly locally down to 1500 m and up to 2700 m.

**Food and Feeding.** Diet includes insects. Usually solitary. Hops through vegetation within 1.5 m of ground. Often rocks body from side to side without moving head, as a *Hyllopezus* antpitta.

**Breeding.** In Colombia, female ready to lay collected in Sept in Antioquia and another in Jul at head of Magdalena Valley. Eggs 20.4 × 16.4 mm. No other data.

**Movements.** Presumably sedentary.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Colombian East Andes EBA and Colombian Inter-Andean slopes EBA. Uncommon to fairly common; probably overlooked in some areas. In Colombia, common in Cueva de los Guácharos National Park and present also in Ucumari Regional Park; occurs in El Tamá National Park, in Venezuela. Considered threatened owing to apparent local distribution at sites where habitat loss is continuing. Main threats are increased human settlement and conversion of forest to farmland; in many areas forest has been largely cleared, and road-building results in further immigration, development, and erosion of habitat. Distribution is, however, poorly known. Surveys in 1990s discovered this species in several localities between existing known sites, and it could be found to be more widespread than is currently realized. If that proved to be so, it may no longer qualify as Vulnerable.

**Bibliography.** Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cory & Hellmayr (1924), Fjeldså & Krahbe (1990), Gertler (1977), Hilty (2003a), Hilty & Brown (1986), Meyer de Schauensee (1982), Meyer de Schauensee & Phelps (1978), Negret (1997, 2001), Phelps & Phelps (1956), Renjifo *et al.* (1997), Ridgely & Tudor (1994), Rodner *et al.* (2000), Schönwetter (1979), Sclater & Salvin (1879), Stattersfield & Capper (2000), Stotz *et al.* (1996), Wege & Long (1995).

## 55. Ochre-breasted Antpitta

### *Grallaricula flavirostris*

**French:** Grallaire ocrée **German:** Ockerbrust-Ameisenpitta **Spanish:** Ponchito Ocráceo

**Taxonomy.** *Grallaria flavirostris* P. L. Sclater, 1858, Rio Napo, Ecuador.

In the past, distinctive races *boliviana* and *similis* have together been treated as forming a separate species; proposed reinstatement as such perhaps tenable, but vocalizations of all races inadequately known; further study required. In addition, although three races described from Pacific slope in Colombia and Ecuador on basis of differences in underpart pattern and bill colour, considerable variation exists among all that region's populations, any one of which can span virtually entire range of variation in these characters; hence, *mindoensis* and possibly *zarumae* perhaps better considered as synonyms of *ochraceiventris*. Eight subspecies recognized.

#### Subspecies and Distribution.

*G. f. costaricensis* Lawrence, 1866 - Costa Rica and W Panama (E to Veraguas).

*G. f. brevis* Nelson, 1912 - E Panamá (E Darién).

*G. f. ochraceiventris* Chapman, 1922 - W Andes of Colombia.

*G. f. mindoensis* Chapman, 1925 - NW Ecuador.

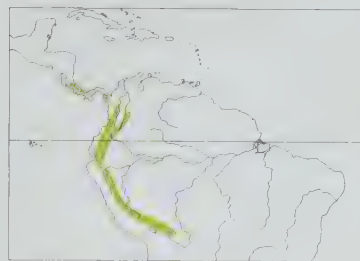
*G. f. zarumae* Chapman, 1922 - SW Ecuador.

*G. f. flavirostris* (P. L. Sclater, 1858) - Amazonian slope in Colombia and Ecuador, and presumably also extreme N Peru.

*G. f. similis* Carriker, 1933 - Peru (S & E of R Marañón) S to Pasco, including Pico Sira in E Huánuco.

*G. f. boliviana* Chapman, 1919 - SE Peru (Puno) SE to C Bolivia (Yungas of Cochabamba).

**Descriptive notes.** 10 cm; male 14-17 g (*brevis*), 14-5-18 g (*similis/boliviana*), female 14-18 g (*similis/boliviana*). Adult has lores and eyering ochraceous; olive-brown above, crown with slight grey wash; flight-feathers edged rufescent brown; face, throat and breast ochraceous, ragged black malar stripe, flanks tawny; breast with olive-brown streaks or scallop marks, variable in extent, usually some short dusky streaks also on flanks; belly and crissum white; iris dark brown; upper mandible black, lower yellow; tarsus fleshy grey. Juvenile not described. Race *costaricensis* is very similar to nominate, but with reduced dusky markings below; *brevis* resembles previous, but more olivaceous above, crown greyer; *ochraceiventris*, *mindoensis* and *zarumae* virtually inseparable, all highly variable below, breast well streaked to almost plain, abdomen white or light ochraceous, also bill all yellow or with upper mandible dark; *boliviana* is brown above, crown tinged grey, broad buff eyering, buff moustache bordered blackish, buff throat streaked



peated at intervals of 8-14 seconds.

**Habitat.** Undergrowth of humid and wet montane forest at 500-2750 m, mostly 900-2200 m.

**Food and Feeding.** One stomach held insects. Forages alone or in pairs. Hops through thick tangled undergrowth, often clinging sideways to mossy trunks and vines, usually within 1 m of ground; makes brief sallies to foliage, trunks or the ground. Does not associate with mixed-species flocks.

**Breeding.** Female ready to lay collected in Aug in NW Ecuador (Carchi); apparent courtship feeding seen in May. Nest built mean 3.1 m up small to medium-sized tree, cup-shaped, made of green moss and lined with twigs and black rhizomorphs. Clutch 1-2 eggs; incubation 17-21 days; nestling period estimated at 14-16 days.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common; probably overlooked. Occurs in several protected areas, e.g. La Planada Nature Reserve, Colombia, and also in Podocarpus National Park, in Ecuador.

**Bibliography.** Allen (1998), Anon. (1998a), Blake & Loiselle (2000), Butler (1979), Cory & Hellmayr (1924), Delgado (2002), Fjeldså & Krahbe (1990), Graves *et al.* (1983), Hilty & Brown (1986), Holley *et al.* (2001), Kirwan & Marlow (1996), Mee *et al.* (2002), Parker *et al.* (1982), Peña (1998), Rasmussen *et al.* (1996), Remsen & Traylor (1989), Ridgely & Greenfield (2001), Ridgely & Gwyne (1989), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Ridgway (1911), Robbins & Ridgely (1990), Robbins *et al.* (1985), Rodner *et al.* (2000), Salaman (1994), Slud (1964), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Taylor (1995), Wetmore (1972), Young *et al.* (1998).

## 56. Scallop-breasted Antpitta

### *Grallaricula loricata*

**French:** Grallaire maillée **Spanish:** Ponchito Lorigado

**German:** Nördliche Schmuckameisenpitta

**Taxonomy.** *Grallaria loricata* P. L. Sclater, 1857, near Caracas, Venezuela.

Monotypic.

**Distribution.** Coastal mountains of Venezuela (Yaracuy E to Distrito Federal).



**Descriptive notes.** 10 cm; 18.4-23 g. Adult has olive forecrown laterally edged black, rufous crown, buff eyering; upperparts olive-brown, wings and tail medium brown; throat pale buff, black malar stripe; white below, breast and flanks heavily scalloped with black; iris brown; upper mandible black, lower yellow; tarsus flesh-coloured. Juvenile not described. **VOICE.** Unknown.

**Habitat.** Lower growth in humid montane forest; sometimes in second growth. At 800-1700 m, mostly above 1400 m; occasionally to 2100 m. Occurs above *G. ferrugineipectus* and below *G. nana* where ranges overlap.

**Food and Feeding.** Diet includes caterpillars

and beetles. Active mainly at dawn and dusk. Forages in low bushes.

**Breeding.** Breeds early in rainy season, from May. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Cordillera de la Costa Central EBA. Rare to uncommon, perhaps quite local. Has suffered from deforestation and habitat degradation within part of its small range. Occurs in Henri Pittier National Park, in Aragua.

**Bibliography.** Collar *et al.* (1994), Cory & Hellmayr (1924), Hilty (2003a), Meyer de Schauensee (1982), Meyer de Schauensee & Phelps (1978), Renjifo *et al.* (1997), Ridgely & Tudor (1994), Rodner *et al.* (2000), Schäfer (2002), Stattersfield & Capper (2000), Stotz *et al.* (1996), Verea *et al.* (1999), Visbal *et al.* (1996), Wetmore (1939).

## 57. Peruvian Antpitta

### *Grallaricula peruviana*

**French:** Grallaire du Pérou **Spanish:** Ponchito Peruano

**German:** Südliche Schmuckameisenpitta

**Taxonomy.** *Grallaricula peruviana* Chapman, 1923, Chaupe, 6100 feet [c. 1860 m], north-west of Huancabamba, Peru. Probably forms a superspecies with *G. ochraceifrons*. Monotypic.

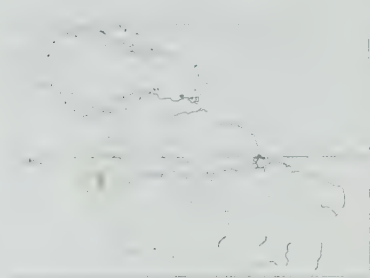
**Distribution.** SE Ecuador (S from Morona-Santiago) and extreme N Peru (E Piura, N Cajamarca).

**Descriptive notes.** 10 cm; male 17-17.5 g, female 18-21 g. Adult male has buff anterior lores, rufous crown and nape, buff eyering broadest in front and behind (broken above eye); olive-brown upperparts; throat white, black malar stripe; white below, breast and flanks heavily scalloped with black; iris brown; upper mandible black, lower mostly flesh-coloured; tarsus olive. Female differs in having crown brown, with some black in forecrown. Juvenile not described. **VOICE.** Unknown.

**Habitat.** Dense to moderately open undergrowth of humid-wet montane forest, at 1650-2100 m.

**Food and Feeding.** Recorded food items include beetles, other insects, and fruit. No information on foraging behaviour.





**Breeding.** Nothing known.  
**Movements.** Presumably sedentary.  
**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species; present in Ecuador-Peru East Andes EBA. Rare, and local. In Ecuador, occurs in Podocarpus National Park, and recent records also from Cordillera de Cutucú (Morona-Santiago). In Peru, recently recorded from Chaupe (Cajamarca) and Cerro Chinguela (Piura). Very poorly known; only available data are the result of mist-netting in region. Forest habitat seriously threatened by logging and mining operations, and conversion to agriculture and pasture; commercial plantations and subsistence farming have replaced forest in many parts of range.  
**Bibliography.** Best *et al.* (1997), Collar *et al.* (1994), Cory & Hellmayr (1924), Fjeldså & Krabbe (1986), Graves *et al.* (1983), Meyer de Schauensee (1982), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Rahbek *et al.* (1993), Rasmussen *et al.* (1996), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Stattersfield & Capper (2000), Stotz *et al.* (1996), Taylor (1995), Vuilleumier *et al.* (1992).

## 58. Ochre-fronted Antpitta *Grallaricula ochraceifrons*

**French:** Grallaire à front ocre **German:** Ockerstim-Ameisenpitta **Spanish:** Ponchito Frentiocre

**Taxonomy.** *Grallaricula ochraceifrons* Graves *et al.*, 1983. Abra Patricia, 6200 feet [c. 1890 m], San Martín, Peru.

Probably forms a superspecies with *G. peruviana*. Monotypic.

**Distribution.** C Andes of Peru in S Amazonas (Cordillera de Colán) and San Martín (Abra Patricia).



**Descriptive notes.** 10-5 cm; male 22-5-23-8 g. Adult male has ochraceous-buff forehead, lores and broad eyering, olive-brown hindcrown; upperparts olive-brown; throat white, black malar stripe; white below, breast scalloped black, sides and flanks tinged buff, flanks streaked olive-brown; iris dark brown; upper mandible black, lower black with pink base; tarsus pinkish-grey. Female resembles male, but crown brown with only faint suffusion of ochraceous, upperparts generally darker brown. Juvenile not described. **VOICE.** Unknown.

**Habitat.** Dense undergrowth of epiphyte-laden humid-wet montane forest, both stunted and

tall, at 1890-1980 m. Occurs alongside the more common and slightly smaller *G. ferrugineipectus* on Cordillera de Colán; their ecological separation remains unknown.

**Food and Feeding.** No published information.

**Breeding.** Nothing known. Of five adult specimens in Jul and Aug, from both known localities, none had enlarged gonads and none was singing.

**Movements.** Presumably sedentary.

**Status and Conservation.** ENDANGERED. Restricted-range species; present in Andean Ridge-top Forests EBA. Rare; total population probably very small. Virtually unknown, and extremely few records, suggesting that it occurs at very low densities. Much of the species' habitat within its small range has already disappeared. Remaining patches continue to be rapidly lost through logging and conversion to agriculture, especially in N (Cordillera de Colán, where local inhabitants expect all forests to have been destroyed by 2004). In S of range, it occurs near the Alto Mayo Protected Forest in San Martín, but protection there ineffective; habitat destruction has been rapid, and road improvements and growth in human population place considerable pressure on the area. Proposed conservation measures include surveys of suitable habitat on isolated ridges in the region, and research on the species' ecology and biology; in addition, proper protection of higher-level forest in Alto Mayo is essential, and a protected area should be established in the Cordillera de Colán as an urgent priority.

**Bibliography.** Collar *et al.* (1994), Davies *et al.* (1994, 1997), Graves *et al.* (1983), Hornbuckle (1999), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Ridgely & Tudor (1994), Stattersfield & Capper (2000), Stotz *et al.* (1996), Vuilleumier *et al.* (1992).

## 59. Rusty-breasted Antpitta *Grallaricula ferrugineipectus*

**French:** Grallaire à poitrine rousse **Spanish:** Ponchito Pechicastaño  
**German:** Rostbrust-Ameisenpitta

**Taxonomy.** *Grallaricula ferrugineipectus* P. L. Selater, 1857, near Caracas, Venezuela.

Vocally distinctive race *leymebambae* may be a separate species; Bolivian birds slightly darker, but differences probably clinal. Full species status has also been proposed for *rara*, mainly on basis of plumage differences; birds from Norte de Santander, in Colombia, tentatively placed with latter race, but racial affiliation uncertain. Three subspecies recognized.

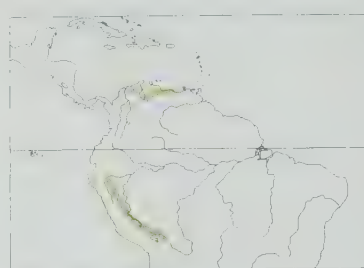
**Subspecies and Distribution.**

*G. f. ferrugineipectus* (P. L. Selater, 1857) - N Colombia (Santa Marta Mts) and N & W Venezuela (coastal mountains, and Andes from S Lara S to C Mérida).

*G. f. rara* Hellmayr & Madarász, 1914 - Perijá Mts, and E Andes of Colombia on W slope (in Cundinamarca), and probably this race, on E slope (in Norte de Santander).

*G. f. leymebambae* Carriker, 1933 - Pacific slope in NW Peru (Piura) and from S Amazonas (S & E of R Marañón) to W Bolivia (La Paz).

**Descriptive notes.** 10-10-5 cm; male 15-21 g, female 13-18 g (*leymebambae*), one male 16 g (*ferrugineipectus*). Adult has large buff or whitish loreal spot (indistinct), buffy eyering, white spot behind eye; head side and upperparts light to dark brown with slight olivaceous wash, wings and tail tawny-brown; bright rufous below, white crescent across lower throat, white centre of belly; iris brown; bill black, base of lower mandible white or pinkish-white; tarsus pink or pinkish-grey. Juvenile is covered with vinaceous-pink fluffy down (least so on head), wing-coverts tipped rufous. Race *rara* has top and side of head deep rufous-brown, back somewhat duller, underparts brighter and almost lacking white crescent; *leymebambae* is larger and darker, more olivaceous above, darker and buffier



(less orange) below, chin and side of throat indistinctly streaked blackish, breast slightly mottled sooty olive, half-ring over eye blackish (Bolivian birds differ slightly from C Peruvian birds in greyer crown, more olive mantle, reduced loreal spot). **VOICE.** Song of *ferrugineipectus* 2-2-2 seconds long, repeated at intervals of 7-9 seconds, a series of 15-16 chipping notes, first 5-6 increasing in volume at pitch 2-2 kHz (or rising from 2 to 2-2 kHz), next 8 notes rising from 2 to 2-4 kHz, last 1-2 descending at c. 2 kHz. Vocalizations of *leymebambae* of 2 types, each in either a rapid or a slow version, apparently by both sexes (sometimes in duet), female

slightly higher-pitched: slow song 2-3-2-6 seconds, series of 9-10 soft evenly paced (3-7 per second) notes at 3-1 kHz, first 2-3 notes lower, rising gradually from 2-9 kHz, much like song of *immaculata* Antbird (*Myrmeciza immaculata*); fast song 15-18 notes at 6-3-6-7 per second, at 2-6-3 (male?) or 3-3-2 kHz (female?); slow call (or alternative song) 1-4-1-5 seconds, 5-7 similar falling chip notes at 2-9-3-3 kHz, pace 3-2-4-1 per second; fast call similar but 0-7 seconds long, pace 7-6 per second.

**Habitat.** Undergrowth of humid montane forest, less commonly forest borders; in some areas mainly dense stands of bamboo. At 600-2200 m, occasionally down to 250 m, in Colombia and Venezuela; 1750-3350 m in Peru and Bolivia. In Peru, occurs alongside rarer *G. ochraceifrons* in S Amazonas (Cordillera de Colán), ecological separation not clarified. Occurs below *G. loricata* and above *G. nana*, where respective ranges overlap.

**Food and Feeding.** Contents of c. 40 stomachs were beetles and other insects. Usually in pairs. Hops along moss-covered branches, drops briefly to forest floor; also sallies to foliage, and flycatches.

**Breeding.** In N of range breeds mainly during first half of rainy season, from late May in Venezuela; eggs in Oct in N Colombia (Santa Marta Mts). Nest a shallow cup of dry, curved petioles placed on slightly concave platform of twigs, 60-120 cm above ground on a sparse vine tangle or small bush; estimated territory size 3500 m<sup>2</sup> in Venezuela. Clutch 2 eggs, 19-20-6 × 15-15-8 mm; incubation period 16-17 days; nestlings between 10 and 13 days of age "play dead" when picked up; fledging takes at least 13 days.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Quite common to common in Venezuela; apparently uncommon and local in Colombia and Bolivia, but probably overlooked; in Peru, rare in NW (Piura) but fairly common in E. Occurs in several protected areas in Venezuela and Peru, e.g. Henri Pittier National Park, Venezuela; race *leymebambae*, possibly a separate species, occurs in Machu Picchu Historical Sanctuary, in SE Peru. Whether race *rara* occurs in the Iroka Reserve and the Sokorpa Reserve in Perijá Mts is not known.

**Bibliography.** Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Graves *et al.* (1983), Hilty (1985, 2003a), Hilty & Brown (1986), Meyer de Schauensee (1982), Meyer de Schauensee & Phelps (1978), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Remsen (1985), Remsen & Traylor (1989), Ridgely & Tudor (1994), Rodner *et al.* (2000), Schäfer (2002), Schulenberg & Parker (1981), Schulenberg & Remsen (1982), Schwartz (1957), Stotz *et al.* (1996), Todd & Carriker (1922b), Walker (2001).

## 60. Slate-crowned Antpitta *Grallaricula nana*

**French:** Grallaire naine **German:** Graukappen-Ameisenpitta **Spanish:** Ponchito Enano

**Taxonomy.** *Grallaricula nana* Lafresnaye, 1842, Bogotá, Colombia.

Races in coastal mountains of Venezuela suggested as forming a separate species, on basis of whiter belly and paler lower mandible, but vocally somewhat similar to other races; further study needed. Proposed race *occidentalis* (W & C Andes of Colombia) synonymized with nominate, as similar birds occur in extreme N Peru. Five subspecies recognized.

**Subspecies and Distribution.**

*G. n. olivascens* Hellmayr, 1917 - coastal mountains of Venezuela in Aragua and Distrito Federal.

*G. n. cumananensis* Hartert, 1900 - coastal mountains of Venezuela in Anzoátegui and W Sucre.

*G. n. pariae* Phelps, Sr. & Phelps, Jr., 1949 - NE Venezuela on Paria Peninsula (Cerro Humo, Cerro Azul).

*G. n. nana* (Lafresnaye, 1842) - Andes from Venezuela (C Trujillo to Táchira) and Colombia (Valle and Cauca) in W, C chain and head of Magdalena Valley, E slope of E range) S to extreme N Peru.

*G. n. kukenamensis* Chubb, 1918 - SE Venezuela (SE Gran Sabana) and W Guyana (Mt Roraima).

**Descriptive notes.** 11-11-5 cm; male 18-5-20-5 g, female 17-5-21-5 g. Adult has dark grey crown, large rufous loreal spot, paler broad eyering; dark olive-brown above, wings dark brown with tawny edging; lower cheeks and underparts bright rufous-chestnut with varying amounts of narrow black feather edging (underparts paler in W & C Colombian Andes and N Peru); buff-white crescent across lower throat, buff-white centre of belly; iris brown; bill black, base of lower mandible pink; tarsus grey. Juvenile is covered in vinaceous-pink down. Race *olivascens* is paler above than nominate, crown paler grey, upperparts more greenish, less olive;

*cumanensis* has lores and underparts brighter, more orange-rufous, chest and belly more extensively white, broader bill, whitish lower mandible; *pariae* is similar to previous, but lores and underparts darker, more orange-brown; *kukenamensis* is paler, crown ash-grey, upperparts ochraceous brown. **VOICE.** Song (*pariae*) 2 seconds long, given at 10-second intervals, c. 35 evenly paced notes beginning at 2-2 kHz, second note slightly lower, rising gradually to 2-5 kHz in middle of series and falling gradually to end at 2-2 kHz, volume increasing over first few notes, then steady. Song of *olivascens* similar, c. 2 seconds, only 26-27 notes, rising from 2-5 to 3-4 kHz over first 5-6, then falling gradually to 2-8-3-1 kHz at decreasing volume, in a recording from C Andes of Colombia somewhat hesitant and weak. Call, at 2-second intervals, a short, sharply descending "chew" at c. 3-5 kHz.

**Habitat.** Undergrowth of humid montane forest, especially thickets of *Chusquea* bamboo. At 1900-3150 m, above *G. loricata* and below *G. lineifrons* where respective ranges overlap; down to 1300 m on Pacific slope, and down to 700 m in Venezuela.



**Food and Feeding.** Details of diet not documented; probably insects and other small arthropods. Hops through undergrowth within 2-3 m of ground, perch-gleaning and briefly sallying to ground, foliage and mossy trunks; occasionally descends to ground, hopping about and stopping abruptly like a *Catharus* thrush. As its congeners, regularly flicks both wings simultaneously while bobbing.

**Breeding.** Specimens in breeding condition in May in Venezuela and in Jun in Colombia (SE Antioquia). Eggs 19.3-20.8 × 15.9-16.1 mm. No information on clutch size or nest.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Generally uncommon to locally fairly common; fairly common in Venezuela, E Ecuador and N Peru. Occurs in several protected areas, including Cayambe-Coca Ecological Reserve, and Gran Sumaco, Sangay and Podocarpus National Parks, all in Ecuador; also, in Venezuela, in Guaramacal and Paria Peninsula National Parks.

**Bibliography.** Andrade & Lozano (1997), Bloch *et al.* (1991), Bond *et al.* (1989), Butler (1979), Chapman (1931), Cory & Hellmayr (1924), Delgado (2002), Fjeldså & Krabbe (1986, 1990), Hilty (2003a), Hilty & Brown (1986), Krabbe, Agro *et al.* (1997), Mayr & Phelps (1967), Meyer de Schauensee & Phelps (1978), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Pfeifer *et al.* (2001), Rahbek *et al.* (1993), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Schäfer & Phelps (1954), Schönwetter (1979), Stotz *et al.* (1996), Taylor (1995), Williams & Tobias (1994).

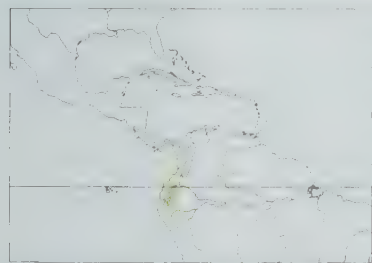
## 61. Crescent-faced Antpitta

### *Grallaricula lineifrons*

**French:** Grallaire demi-lune **German:** Halbmond-Ameisenpitta **Spanish:** Ponchito Medialuna

**Taxonomy.** *Apocryptornis lineifrons* Chapman, 1924, Oyacachi, Ecuador. Monotypic.

**Distribution.** C Andes of S Colombia (E Cauca) and E Ecuador (S to R Zamora).



**Descriptive notes.** 11-5 cm; male 20.5-22.5 g, female 17-22 g. Adult has slate-grey crown and nape, large white loreal spot continuing into broad white moustache, white spot behind eye; side of head black, buff spot on side of neck; upperparts olive-brown, outer webs of alula and edge of outer primary whitish; upper chin and centre of throat white, lower chin and side of throat black, lower throat buff; breast buff, sides and flanks olive-brown, belly white, all streaked black, crissum plain white; iris dark brown; bill black; tarsus vinaceous grey to blue-grey. Juvenile not described. **VOICE.** Song, by both sexes, 2.4-3.5 seconds long, repeated

every 10-20 seconds for a minute or more, an evenly paced series of 14-20 notes, at first increasing in volume, pitch rising steadily usually from 3.2 to 4.6 kHz (extremes 3 and 4.9 kHz) to level over last 4-8 notes. Call, also by both sexes, 0.5 seconds long, a descending single whistle at c. 4 kHz.

**Habitat.** Undergrowth of humid montane forest and adjacent secondary woodland, at 2900-3400 m. Occurs above *G. nana*, where ranges overlap.

**Food and Feeding.** Diet includes spiders, and insects such as beetles (Curculionidae, Staphylinidae, Chrysomelidae, Anthripidae), beetle grubs, true bugs (Hemiptera), and apparently treehoppers (Homoptera). Solitary or in pairs. Hops quietly through undergrowth, regularly flicking wings, often clinging sideways to mossy lianas and trunks; occasionally descends briefly to pick prey from the ground. Does not follow mixed-species flocks.

**Breeding.** Recently fledged young found in Mar; song heard only Jan-Apr in Ecuador. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Northern Central Andes EBA and Southern Central Andes EBA. Rare to locally uncommon or fairly common, and known from relatively few localities; possibly overlooked. In Ecuador, after absence of records for c. 70 years, it was relocated in 1991 and has since been found at a number of places, thereby extending known range far to S. Occurs in Puracé National Park, in Colombia; in Ecuador, occurs in Cayambe-Coca Ecological Reserve, and presumably also in Gran Sumaco National Park and Sangay National Park. Agricultural expansion has already caused extensive destruction of mature forest within this species' limited range; this is set to continue, with further degradation of habitat likely. In Ecuador, lowering of the tree-line by cutting and burning for pasture, even in the national parks, is a major problem. Nevertheless, the species seems capable of surviving in patchy and somewhat degraded forest and second growth; possibly less at risk than formerly believed. **Bibliography.** Butler (1979), Collar & Andrew (1988), Collar *et al.* (1994), Cresswell, Hughes *et al.* (1999), Cresswell, Mellanby *et al.* (1999), Fjeldså & Krabbe (1990), Granizo (2002), Hilty & Brown (1986), Krabbe, Agro *et al.* (1999), Krabbe, Poulsen *et al.* (1997), Lehmann *et al.* (1977), Meyer de Schauensee (1982), Negret (2001), Pearman (1994c), Renjifo *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Robbins *et al.* (1994), Rodner *et al.* (2000), Stattersfield & Capper (2000), Stotz *et al.* (1996), Taylor (1995).

## Genus *PITTASOMA* Cassin, 1860

## 62. Black-crowned Antpitta

### *Pittasoma michleri*

**French:** Grallaire à tête noire **German:** Schwarzscheitel-Ameisenpitta **Spanish:** Tororoi Capinegro

**Other common names:** Michler's Antpitta

**Taxonomy.** *Pittasoma Michleri* Cassin, 1860, Río Truando, Colombia. Two subspecies recognized.

**Subspecies and Distribution.**

*P. m. zeledoni* Ridgway, 1884 - Caribbean Costa Rica and Panama.

*P. m. michleri* Cassin, 1860 - Pacific coast of Panama (from Veraguas) E to NW Colombia (N Chocó). **Descriptive notes.** 18-19 cm; one unsexed 110 g. Adult male has glossy black crown, dull white lower lores usually flecked with dusky; auricular and moustachial regions uniform deep chestnut, the latter partly mixed with black, especially posteriorly; side of neck rufous brown; upperparts mostly



with black barring; iris brown; upper mandible blackish, lighter along cutting edge, lower mandible flesh-coloured; tarsus grey or blue-grey. Female differs from male mainly in having chin and throat mixed white and light chestnut and irregularly spotted or barred with black, chest sometimes with rusty wash, black markings below narrower. Juvenile not described. Race *zeledoni* is larger than nominate, darker, more rufous, above, male with black head and throat except for dark chestnut flecks on auriculars and face, sometimes rufous and white flecks on throat. **VOICE.** Inadequately documented; song a long series of high whistles for a minute or more, alarm call abrupt series of c. 16 harsh notes slowing near end; apparently similar to vocalizations of *P. rufopileatum*.

**Habitat.** On or near ground in humid-wet forest; apparently absent from drier, more seasonal forests of N Chocó (Colombia). Lowlands to 1000 m.

**Food and Feeding.** Diet not documented. Alone or in pairs. Hops or bounds rapidly over forest floor, keeping concealed; occasionally perches on low branches. Follows swarms of army ants.

**Breeding.** In Panama, eggs in Apr in E (Darién) and recently fledged juvenile following female in mid-Jul in Canal Zone. A single nest known, a thin-walled cup of fine dark rootlets on a thin bed of dead leaves, placed 1 m up in crown of a low *Phytelephas* palm. Clutch 2 eggs.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Central American Caribbean Slope EBA and Darién Lowlands EBA. Apparently uncommon and local throughout its range. In Costa Rica, occurs in Braulio Carrillo National Park and Hitoy Cerere Biological Reserve; occurs in Los Katios National Park, in Colombia.

**Bibliography.** Angehr & Christian (2000), Anon. (1998a), Cory & Hellmayr (1924), Hilty & Brown (1986), Karr (1971a), Meyer de Schauensee (1982), Ridgely & Gwyne (1989), Ridgely & Tudor (1994), Ridgway (1911), Robbins *et al.* (1985), Rodner *et al.* (2000), Siud (1964), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Wetmore (1972), Willis (1985c).

## 63. Rufous-crowned Antpitta

### *Pittasoma rufopileatum*

**French:** Grallaire à sourcils noirs **German:** Rostscheitel-Ameisenpitta **Spanish:** Tororoi Capirrufo

**Taxonomy.** *Pittasoma rufopileatum* Hartert, 1901, Bulón, Esmeraldas, Ecuador.

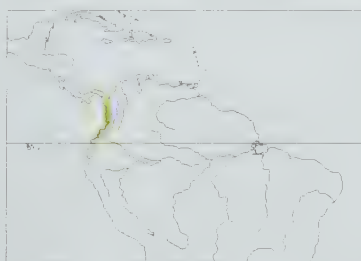
In view of the species' variable plumage, race *harterti* may be synonym of nominate, the two being geographically close, with no dispersal barriers between their ranges. Three subspecies recognized.

**Subspecies and Distribution.**

*P. r. rosenbergi* Hellmayr, 1911 - Pacific slope of Colombia in C & S Chocó.

*P. r. harterti* Chapman, 1917 - S Colombia in W Nariño (Barbacoas, Guaycana).

*P. r. rufopileatum* Hartert, 1901 - NW Ecuador (Esmeraldas, Pichincha).



**Descriptive notes.** 16-17.5 cm; one male 96 g, one female 97 g (*rufopileatum*). Adult male has rufous crown, palest laterally, contrasting broad black band from lores back to nape; upperparts olive-brown, back with broad black streaks, wings and tail browner, tips of wing-coverts and tertials with whitish dots; cheek, neck side and throat buff to deep ochraceous, sparsely dotted with black; most of underparts regularly barred black and white, flanks olive-brown; iris chocolate brown; bill black; tarsus grey. Female differs from male in having black superciliary band speckled with white, underparts ochraceous with sparse and irregular black markings. Juvenile not

described; some males resemble females, and are possibly immatures. Race *rosenbergi* is distinctly smaller, both sexes plainer overall, cheeks and throat richer rufous, underparts dull buffy white and unmarked; *harterti* is intermediate, male with underparts variably spotted or barred with black, whole face rufous. **VOICE.** Song, given from ground or low perch, a single whistle 0.4-0.8 seconds at 2.2-2.4 kHz, distinctly descending at end, sometimes also slightly at start, given at intervals of 1.3-1.6 seconds for up to several minutes. Alarm call, by both sexes at intervals of 4-10 seconds, a decelerating chatter 1-3 seconds long of 9-28 notes, each with wide frequency span; also loud and emphatic "tche-tchik".

**Habitat.** On or near ground in shady parts of wet forest and second growth; lowlands to 1100 m.

**Food and Feeding.** Diet not documented. Alone or in pairs. Hops and bounds rapidly on forest floor, then pauses, sometimes remaining motionless for long periods. Follows swarms of army ants, usually singly; in such situations tends to be dominant over typical antbirds (Thamnophilidae) and woodcreepers (Dendrocolaptidae).

**Breeding.** Specimen in breeding condition in Feb in Colombia (Chocó). No other information.

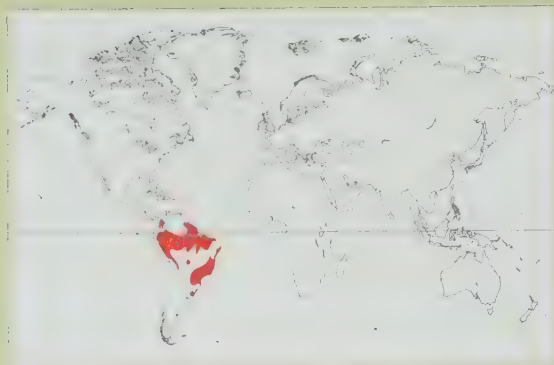
**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Chocó EBA. Generally rare to uncommon; reportedly common in SW Cauca (Colombia). In Ecuador, occurs in Cotacachi-Cayapas Ecological Reserve and presumably also in the Awá Forest Reserve. Possibly occurs in several protected areas in Colombia. Road-building, followed by human immigration, and severe logging activity have already destroyed much of the forest in Colombian part of this species' range; these factors, along with agricultural expansion, cattle grazing and mining operations, are combining to result in increasing loss and degradation of habitat. Could become threatened in near future.

**Bibliography.** Butler (1979), Cory & Hellmayr (1924), Granizo (2002), Granizo *et al.* (1997), Haffer (1975), Hilty & Brown (1986), Meyer de Schauensee (1982), Olivares (1958), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Salaman (1994), Stattersfield & Capper (2000), Stotz *et al.* (1996), Taylor (1995), Willis (1985c).



Class AVES  
 Order PASSERIFORMES  
 Suborder FURNARIII  
**Family CONOPOPHAGIDAE (GNATEATERS)**



- Small, diurnal birds with a stocky shape, short tail, short, rounded wings, proportionately long legs, and flattened, weakly uncinuate bill; most with conspicuous white postocular tufts.
- 10-16 cm.



- Neotropical Region.
- Humid and semi-humid forest and woodland.
- 1 genus, 8 species, 21 taxa.
- No species threatened; none extinct since 1600.

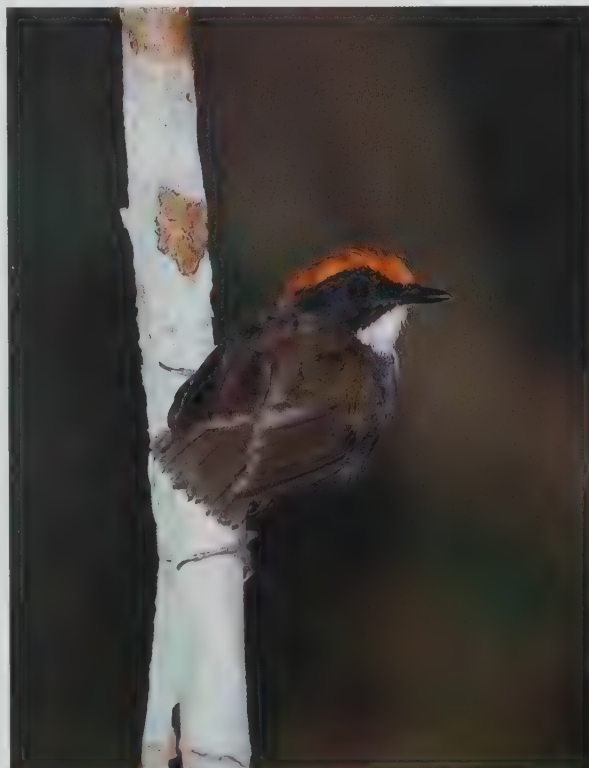
### Systematics

The genus *Conopophaga*, established by L. J. P. Vieillot in 1816, comprises all of the eight currently recognized species of gnateater, the name being derived from the Greek words *konops*, meaning a gnat (Culicidae), and *phagein*, to eat. The unity of this group has been universally acknowledged, although the antpitta genus *Corythopsis*, with two species now known to belong to the tyrant-flycatcher family Tyrannidae, was for many years also included in the Conopophagidae. As a consequence, the family was sometimes referred to as the "antpitts". The gnateaters have been considered near relatives of the ground-antbirds (Formicariidae) and the tapaculos (Rhinocryptidae) for more than a century, and this close relationship has been supported by recent anatomical and biochemical data, but their status as a separate family has been polemic. The results of the DNA-DNA hybridization studies undertaken by C. G. Sibley and J. E. Ahlquist provided the first objectively defensible evidence for recognition of the Conopophagidae, and indicated that the family should be placed together with the Formicariidae and the Rhinocryptidae in a superfamily Formicarioidea.

More recent implications for the systematic position of the Conopophagidae come from a molecular analysis of the ground-antbirds and presumably related groups by N. H. Rice, who found strong support for a sister relationship of *Conopophaga* to the antpitta genus *Pittasoma*, heretofore considered an integral member of the Formicariidae. The fact that several characteristics of *Pittasoma* which set it apart from other antpittas are shared with *Conopophaga* lends credence to this hypothesis. For example, both genera possess a rather broad and flattened bill, and both are sexually dichromatic. The small, rounded spots on the wing-coverts of both species of *Pittasoma* and the bold, white superciliary stripe and well-defined rufous cap of the Rufous-crowned Antpitta (*Pittasoma rufopileatum*) also find closer parallels in *Conopophaga* than they do in any of the many antpittas. The song of the Black-crowned Antpitta (*Pittasoma michleri*), a long series of thin, penetrating notes, resembles more the songs of some of the gnateaters than it does those of other antpittas. Molecular, morphological and vocal characteristics appear, therefore, to point to a shared history for *Conopophaga* and *Pittasoma*, with *Pittasoma* representing the radiation in the lowlands west of the Andes.

Finally, in the matter of possible relationships of the Conopophagidae to other suboscine groups, it is worth giving

some attention to the resemblance of the gnateaters to the antthrushes of the formicariid genus *Formicarius*. No close relationship between these groups has been suggested previously. Nevertheless, the two genera are fairly similar morphologically, and most of the differences between them in proportions and skeletal/muscular structure could be attributed to the almost completely terrestrial habits of *Formicarius*. In addition, the known nests of the two groups share a similar, leafy cup structure, without any dome or pendent elements. Perhaps more to the point, there are striking parallels in plumages and vocalizations between the Black-cheeked Gnateater (*Conopophaga melanops*) and the Rufous-capped Antthrush (*Formicarius colma*, the type of the genus) that seem a heavy load to be explained by conver-



The eight species of gnateaters are small, plump, short-tailed and rather long-legged denizens of the understorey of humid forests in tropical South America. Their closest relatives are found among the ground-antbirds (Formicariidae) and the tapaculos (Rhinocryptidae). Striking similarities in appearance and vocalizations between the **Black-cheeked Gnateater** and the **Rufous-capped Antthrush** (*Formicarius colma*) might indicate a hitherto unnoticed close relationship, with important implications for the systematics of these genera.

[*Conopophaga melanops*, Linhares Natural Reserve, Espírito Santo, Brazil. Photo: Edson Endrigo]



Gnateaters are seldom found more than 1.5 m above ground level, but they spend very little time on the forest floor proper.

This male **Rufous Gnateater** has paused on a small stem, perhaps to scan for arthropods.

A typical attempt at prey capture is launched from a low perch, the bird watching until a suitable target is spotted and then descending to snatch the prey item from the ground.

Although gnateaters occasionally toss aside a leaf while pursuing prey, they spend no more than a few seconds on the ground. Birds often remain at scanning perches for several minutes, and travel among perches in short, low flights.

[*Conopophaga lineata*  
*vulgaris*,  
Poços de Caldas,  
Minas Gerais, Brazil.  
Photo: Haroldo Palo]



gence. In this regard, it is interesting to note that the Rufous-capped Antthrush is the only member of its genus lacking bare circumorbital skin, as also do the Black-cheeked Gnateater and all other gnateaters, and it is the only member of *Formicarius* that seems to show some sexual dichromatism. A close relationship between those two species would have important implications for the systematics and taxonomy of the groups involved.

There has been notably little attention paid to systematics within the Conopophagidae, and the somewhat arbitrary classification of J. L. Peters's *Check-list of Birds of the World*, the relevant volume of which was published in 1951, has been followed by all recent authors. While it seems reasonable to accept that *Conopophaga* is monophyletic, there appear to be at least two more recent diversifications within the genus that would require some revision of the systematics. Speciation in the Conopophagidae has been most diverse in the eastern half of Brazil, south of the Amazon River. One somewhat anomalous species, in that its plumage and vocalizations do not immediately place it close to any others, is largely restricted to this region. This is the Rufous Gnateater (*Conopophaga lineata*). It may have diverged at an early stage from other members of the family, evolving in semi-humid woodland, where it is still most common and widespread today. Its several range disjunctions, its geographically variable vocalizations and, to a lesser extent, its plumage also point to a fragmented evolutionary history. The Rufous Gnateater appears to be related to the Andean Chestnut-crowned Gnateater (*Conopophaga castaneiceps*) and Slaty Gnateater (*Conopophaga ardesiaca*), which are likely sister-species, and to the Ash-throated Gnateater (*Conopophaga peruviana*) of lowland western Amazonia. Speciation in this latter trio seems relatively recent. It also may be closely related to the Hooded Gnateater (*Conopophaga roberti*) of the transition zone between rainforest in far lower Amazonia and the drier habitats of interior north-eastern Brazil. The two share some characteristics of vocalizations, and all of the above species have a pale lower mandible.

The exceptionally large Black-bellied Gnateater (*Conopophaga melanogaster*) of east-central Amazonia is particularly enigmatic, and its affinities within this small family are not clear. Although its plumage and morphology are unique within the genus, its vocalizations suggest that its closest relatives are to

be sought in the above-mentioned assemblage. Alternatively, it may perhaps merit placement in a separate genus; indeed, it was made the type of the genus *Pseudoconopophaga*, erected by C. Chubb in 1918, although this has since been subsumed in *Conopophaga*.

The remaining gnateater taxa appear to belong to a separate radiation that gave rise to the Chestnut-belted Gnateater (*Conopophaga aurita*) complex, comprising *aurita* with its several subspecies. The unity of this complex is clear from close similarities in the plumage and vocalizations of the various taxa. The oldest divergence from this group, and perhaps from all gnateaters, apparently resulted in the Black-cheeked Gnateater becoming isolated in the Atlantic Forest of Brazil, where it occurs almost throughout the wide latitudinal spread of humid, mostly coastal, forest.

A highly distinctive species, the Black-cheeked Gnateater lacks the postocular tufts that characterize other taxa in the family, although a few individuals do show some white feathers in the postocular region. It is also the only conopophagid that does not emit a characteristic chattering series of notes or produce mechanical wing sounds in flight (see Voice). In the absence of a well-corroborated molecular analysis, these traits could be interpreted as derived, implying a more recent divergence from the rest of the Conopophagidae, or, alternatively, they could be viewed as primitive, basal to the radiation of all gnateaters. Some additional considerations may shed a little more light on this question. The fact that the Black-cheeked Gnateater has undergone only minimal differentiation in plumage or vocalizations throughout its wide latitudinal range in the Atlantic Forest implies that it has for a long period of time occupied the entire region which it inhabits today. In other words, had the Black-cheeked Gnateater colonized the Atlantic Forest from an established Amazonian, or even Andean, ancestor, it is improbable that it would have spread to occupy its extensive contemporary range, or to have accomplished this without more than one invasion. Such a history of geographical expansion or multiple colonization would almost certainly be expressed phenotypically with more marked differentiation in plumage and, especially, vocalizations than is evident today. This conclusion seems likely in view of the biogeographical patterns and levels of morphological and vocal





With a body mass of 40 g, the **Black-bellied Gnateater** is by far the largest of the conopophagids. This species exhibits the sexual dichromatism that is typical of the family, the male being more brightly coloured than the female, and having postocular plumes that are white rather than greyish. The plumes are normally concealed by overlying crown feathers, but during aggressive encounters, they may be exposed dramatically, appearing as silvery horns protruding from the sides of the crown.

[*Conopophaga melanogaster*, Reserva Indígena Kayapó, Pará, Brazil. Photo: Bret Whitney]

differentiation documented for other lowland Atlantic Forest birds which have clearly reached the Brazilian coast via Amazonian stock.

In light of the above-mentioned anomalies that the Black-cheeked Gnateater presents within the family, this points to an early divergence from other gnateaters, regardless of which other species are proposed as its closest relatives. The idea that absence of postocular tufts, of chatters and of wing-whirring may be primitive characteristics, rather than novel ones, finds some support in the fact that these features are also lacking in the two species of *Pittasoma antipittas* (and the genus *Formicarius*). If that is a phylogenetically informative parallel, then the Black-cheeked Gnateater is probably more like the ancestral stock that gave rise to all of the *Conopophaga* than are any of the other species in the family.

Biogeography, in particular the examination of patterns of sympatry and allopatry, provides additional clues towards an understanding of the relationships within the Conopophagidae as proposed above. In most areas of their overall distribution, only a single species of gnateater occurs in any given locality. This is especially true in the Guianas and the Andes. In the latter region, however, J. Arvin recently confirmed a point of overlap in the distributions of the Chestnut-crowned and Slaty Gnateaters in south-eastern Departamento Cuzco, in south Peru. This probably represents a secondary contact between sister-species and, as would be predicted, the two co-exist in structurally different habitats. The situation is more complicated in upper Amazonia, where the Chestnut-belted and Ash-throated Gnateaters living north of the Marañón/Amazon Rivers replace each other across the Río Napo, with the former species found to the east and north and the Ash-throated Gnateater to the west and south. South of the Amazon, however, the two may be found essentially together in continuous *terra firme* forest, but in different biotopes growing on different soils. In lower Amazonia, in the extensive area from the middle Río Xingú (possibly even from the Río Tapajós) eastwards to the Río Tocantins, the Chestnut-belted and Black-bellied Gnateaters occur together, although they are found in structurally different micro-habitats. The Rufous and Black-cheeked Gnateaters are mostly elevationally parapatric in humid, coastal forests of eastern Brazil, where the former tends to replace the latter at higher altitudes in places where their ranges meet. The two are occasionally syntopic, being found in the same biotope, but this may result largely from anthropogenic alteration of habitat.

All members, or named taxa, in the proposed "Chestnut-belted Gnateater complex" are allopatric, replacing each other across major rivers in the Guianas and Amazonia, and, if the Black-cheeked Gnateater is included in this group, also in the Atlantic Forest of Brazil. The "Rufous Gnateater group", comprising that species and the Chestnut-crowned, Slaty and Ash-throated Gnateaters, along with the Hooded and, possibly, the Black-bellied Gnateaters, shows a less obvious, and probably older, pattern, but allopatry is again the rule. In summary, then, where there is significant geographical overlap in distribution between two species of gnateaters, one from each lineage is present, rather than two from the same assemblage. In the context of the separate gnateater radiations suggested by vocal and morphological data, as outlined above, these observations make some sense.

In any future analysis aimed at resolving the relationships of the Conopophagidae or those within the genus *Conopophaga*, it would seem essential that a special effort be made to include samples of *Conopophaga melanops*, preferably from near Rio de Janeiro, the type locality in south-east Brazil; in addition, such an analysis should anchor any phylogeny to the existing nomenclature and taxonomy with inclusion of topotypical samples of *Conopophaga aurita aurita*, the type of the genus, from as close to the French Guiana region as possible. Furthermore, it would be wise to include samples of the Rufous-capped Anthrush from at least the type locality, which is also the French Guiana region, as well as from near Rio de Janeiro, which is the type locality of its isolated Atlantic Forest subspecies *ruficeps*.

Unpublished field studies of the vocalizations and behaviour of all of the gnateaters, combined with an examination of morphological variation in museum specimens, and biogeographical considerations, suggest that established species limits in the Conopophagidae will in all likelihood undergo significant revision, within both the "Rufous Gnateater complex" and the "Chestnut-belted Gnateater complex". Some potential modifications to existing taxonomies are outlined in the following few paragraphs.

In the case of the Chestnut-belted Gnateater, geographical variation north of the Amazon is relatively minor. In the west, from east Ecuador and south-east Colombia to north-west Brazil and north-east Peru, the races *inexpectata* and *occidentalis* tend to have a whitish belly, although a few specimens exist which show the buffish wash typical of birds south of the river. In the latter part of the range, however, geographical variation in voice and plumage is striking, with the song exhibiting an



abrupt change in pace and note structure across the Rio Madeira/Tapajós interfluvium. In addition, males south of the Amazon tend to have more extensive black on the throat and, therefore, reduced chestnut on the breast; typically, they also have a buff, rather than white, belly, but this is a somewhat variable feature. The subspecies *snethlageae*, occurring from both banks of the lower Rio Tapajós eastwards to central Pará, has most of the breast black and the belly buff, while *pallida*, immediately to the east of that race, is very similar but with a whitish belly. Compared with all other races of the species, *snethlageae* also has the black scaling on the back greatly reduced or even absent; dorsal scaling is also reduced in *pallida*, but to a lesser degree. It seems possible that *pallida* represents the pale end of a cline that begins with *snethlageae*; the two apparently meet in the region between the Xingú and Tocantins rivers, and there are some intermediate specimens from the Serra dos Carajás region. Furthermore, confusing plumage variation within the purported range of the western race *australis* has been remarked upon, with some specimens from near the type locality, on the Rio Purús, having an appearance approaching that of lower-Amazonian *snethlageae*.

Bearing in mind the marked plumage differences, as well as those of voice, it may be better to treat *snethlageae* as a distinct species, with *pallida* as either a subspecies or a synonym of it. Justification for such a "split" would, of course, require a proper analysis of the whole "Chestnut-belted Gnateater complex".

In defining subspecies of the Black-cheeked Gnateater, much importance has been attached to the width of the black frontal band on adult males. While there may be a tendency for birds in the northern portion of the range to have a wider frontal band than do southern birds, this character appears, nevertheless, to be so variable, even among individuals from a single locality, that its usefulness in separating populations cannot be relied upon. It should be noted, also, that all Black-cheeked Gnateater populations show a distinct black frontal band, despite statements in the literature implying that this band is lacking in the southern, nominate, form. Similarly, the coloration of the back in topotypical specimens of the three currently recognized subspecies seems not to agree well with published descriptions. As with the black frontal band of males and the dorsal coloration of both sexes, such features as the presence or absence of spots on the upperwing-coverts and the extent of grey or white on the underparts, while admittedly variable, appear to show no geographical restriction. Overall, the Black-cheeked Gnateater displays little geographical variation in plumage.

In this connection, it seems rather doubtful that M. H. K. Lichtenstein based his 1823 description of the subspecies *perspicillata* on direct comparison with the type specimen or a series of topotypical specimens of *melanops*. Moreover, it is clear that O. M. O. Pinto, in 1954, diagnosed the northern form *nigrifrons* only in relation to "*perspicillata* from Baía". At the time when Lichtenstein described the new taxon, "Baía", the type locality, referred to the city presently known as Salvador, on the coast of the state of Bahia. On the basis of the distribution of appropriate habitat in Bahia and the known routes of collectors active in the region in the early nineteenth century, it is likely that Lichtenstein's specimen was obtained from somewhere near, or to the south of, Salvador. The distributional limits and the diagnosability of *perspicillata* are undetermined and require further study. Recent records of Black-cheeked Gnateaters from the coastal state of Sergipe, immediately east of north Bahia, may be referable to the same population as the Bahia birds, whatever their name. The question of the southern limit of *perspicillata* has never been addressed.

Thus, it appears that neither *perspicillata* nor *nigrifrons* is clearly defined morphologically or geographically, although it may be expected that at least the north-east Brazilian birds, being disjunct from southern populations, could display characteristics sufficient to merit their recognition as the separate taxon *nigrifrons*. Further study of longer series of specimens will perhaps shed some light on this confusing situation. Until such is accomplished, however, and mostly for the sake of consistency with the literature, it is probably best to allow three subspecies of the Black-cheeked Gnateater to stand.

The holotype of the nominate form of the Rufous Gnateater, housed at the American Museum of Natural History, in New York, is a badly foxed skin originally prepared as a mount. Recent tape recordings and specimens obtained from near the type locality, in the region of Vitória da Conquista, in Bahia, Brazil, do, however, allow adequate comparison of this taxon with other populations. The northernmost subspecies *cearae*, known only from Serra de Baturité, in northern Ceará, is morphologically and vocally distinctive, and it may merit species status, a treatment recommended by C. E. Hellmayr as long ago as the early part of the twentieth century. The supposed occurrence of *cearae* in Pernambuco and north Bahia, well south of the isolated range of hills at the type locality, requires careful investigation.

More remarkable, however, is the geographical variation in songs of Rufous Gnateaters. In broad terms, the northern populations, those occurring southwards roughly to southern Goiás and Rio de Janeiro, sing more slowly than do southern birds, while there is also significant variability in the structure of the notes in the four or five, or more, different song types (see Voice). Determination of the distributional limits of these vocalizations, and the extent to which they correspond to named populations, requires much additional research. For instance, at least three different song types may be heard within the supposed range of the subspecies *vulgaris*, which is said to extend from Mato Grosso do Sul, east Paraguay and north-east Argentina across to south-east Brazil. The subsumed name *anomalous*,

**The Ash-throated Gnateater** occupies dense tangles of vegetation in terra firme forest in Amazonian Ecuador, Peru and western Brazil. It exhibits fairly marked sexual plumage dichromatism: the male has a dark brown crown and a grey breast, face and back, whereas the female has an orange-rufous breast and a brown crown, face and back. Both sexes have black scaling on the back feathers and buff tips on the wing-coverts. The biogeography of conopophagids is especially intriguing in that, beyond the borders of Amazonia, only one species usually occurs at any single locality. In the lowlands of western Amazonian Brazil, Chestnut-belted (*Conopophaga aurita*) and Ash-throated Gnateaters occur together in continuous forest but on different soil types. North of the Amazon in eastern Ecuador, these two species replace each other across the River Napo.

[*Conopophaga peruviana*. Above: Santiago, Morona-Santiago, Ecuador. Photo: Steven Holt/VIREO.

Below: Intuto, Alto Río Tigre, Loreto, Peru. Photo: José Álvarez Alonso]





originally used for a specimen from Alto Paraná, in Paraguay, appears to be the only other name available, and it would stand for the most rapidly paced song type. Unfortunately, plumage variation is essentially lacking throughout the southern half of the Rufous Gnateater's range. Similarly, if specimens from the interior portion of the range, usually included within the nominate race, are found to be taxonomically separable, this may revalidate the subsumed subspecies *rubecula*, described in 1931 from Veadeiros, in north-eastern Goiás. Once again, however, it will be quite a challenge to gain a reasonable understanding of the distributional limits of the probably multiple taxa within *C. lineata* in those regions where plumage characteristics vary only slightly.

Additional problems are posed by two specimens from Ibiquera, near Chapada Diamantina, in central Bahia. These are distinctive in having the crown noticeably more rufous-chestnut than the back, and in having paler underparts, with a more whitish throat. They may represent an unnamed taxon.

It has to be concluded that, on present knowledge, the published range limits of the three currently recognized subspecies of the Rufous Gnateater are largely indefensible.

Farther west in South America, in the eastern foothills of the Andes, the nominate race of the Slaty Gnateater is found from south Peru to south Bolivia. Its plumage variation within the Bolivian part of this range is confusing, as there appear to be both dark and light specimens from Cochabamba and, in the case of females, three geographically defined classes of back colour. Furthermore, it seems that the semi-humid forest of Santa Cruz, in central Bolivia, may hold another, as yet undescribed taxon. While two subspecies of this gnateater are currently recognized, further research may well indicate that additional ones should be named.

Finally, it is of interest to consider further the highly distinctive Black-bellied Gnateater. This large species is found in lower Amazonia east of the Rio Madeira, from its highest reaches within Brazil to near the mouth, thence eastwards to the west bank of the lower Rio Tocantins. It is certainly known to occur on both banks of the lower Rio Tapajós, but is apparently absent from the Teles Pires region. There seem to be no records from the west bank of the Rio Xingü, although the species' pres-

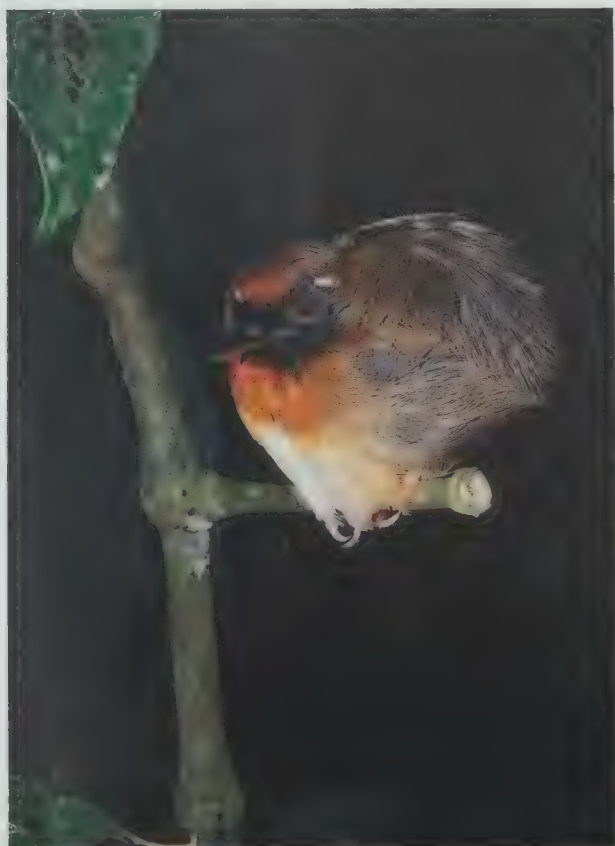
ence in the middle and lower reaches along the east bank is confirmed. The Black-bellied Gnateater was originally described from the Rio Madeira, but it seems not to occur on the west bank of that river, nor anywhere farther west. It would be desirable to define more precisely the type locality, which must be somewhere on the east bank. This might be accomplished if it were possible to determine the collector of the type specimen and details of his or her itinerary.

Interestingly, there exists a single Bolivian specimen of the Black-bellied Gnateater which was supposedly collected at Reyes, a small town in north-west Beni surrounded by extensive, flat, seasonally inundated grassy savanna. It was originally described, in 1889, as *Conopophaga rusbyi*, a name which has been treated ever since as a synonym of *Conopophaga melanogaster*. Although this specimen almost certainly was not taken at Reyes, it seems likely that it was obtained relatively nearby in tall gallery forest along the Río Beni. It is clear that H. Rusby, a botanist who collected the bird, travelled down the Beni river, which becomes the Madeira where it enters Brazil. It also seems possible, however, that it was collected somewhere along the Madeira in Brazil, but was labelled as coming from Reyes. In any event, the Reyes specimen remains the sole record of the Black-bellied Gnateater from Bolivia. Whether or not its provenance may be trusted, further efforts to find the species in Bolivia should be concentrated in humid, broken lowland forest east of the River Beni, such as the Riberalta area.

### Morphological Aspects

The gnateaters are a morphologically conservative group, showing little variation in basic shape and characteristics. All are small, and are rather stocky in shape, with a short tail and short, rounded wings. They have proportionately long legs, and a flattened bill with a very slight hook at the tip. The majority have conspicuous white postocular tufts.

Most members of the family measure approximately 12 cm in total length, with a weight falling in the range 20-25 g. The one notable exception is the Black-bellied Gnateater, which



Next to nothing is known about the roosting habits of gnateaters. This male **Chestnut-bellied Gnateater** has chosen to roost in a site that appears to be rather free of concealing vegetation. Another male of this species was discovered asleep on a vine about a metre above the ground and also in a relatively open location. Given the general habitat preferences of gnateaters, it is perhaps surprising that the handful of records of roosting birds have not been in dense tangles. Whether this result reflects a true preference for open roosts, or is an result of the difficulty of discovering so small a bird in dense vegetation, is not yet known.

[*Conopophaga aurita occidentalis*, Amazonian rainforest, Ecuador.  
Photos: Peter Oxford/  
BBC Natural History Unit]



**Black-cheeked Gnateaters** are endemic to the Atlantic Forest in eastern Brazil. Based on the timing of singing activity of males and the presence of active nests in October and November, breeding is largely confined to the Southern Hemisphere "spring".

This female is at an incomplete nest. As with all known gnateater nests, the basic structure is a shallow cup placed in a sapling within a network of small supporting stems.

Nests are well camouflaged by dead leaves and small twigs that protrude from the rim, although they tend to be placed in relatively open situations rather than in dense tangles. Most nests are built within a metre of the ground, but no nests have been discovered on the ground itself.

[*Conopophaga melanops nigrifrons*,  
Alagoas, Brazil.  
Photo: Anita Studer]



is conspicuously larger and heavier: it is about 15.5 cm long and weighs 40 g. Even plumage variation seems fairly limited. Among males, the most obvious aspects are the relative extents of black and rufous on the head and underparts. Females lack black in the plumage, thus varying even more subtly. On males of several species the outer two or three primary feathers are weakly modified, with the distal web having the middle portion cut out and the apex slightly enlarged, enabling the production of a loud whirring sound in flight (see Voice).

E. O. Willis and colleagues, in an examination of 116 adult specimens of Rufous Gnateaters from the state of São Paulo, in south-east Brazil, calculated that the average adult required about 2.3 months to complete the wing moult. They also determined that signs of moult were present only during the months November to March. It is interesting to note that this is closely coincident with the species' breeding period in this region of Brazil (see Breeding). The Black-cheeked Gnateater has also been found to moult during March, but the timing of moult of the other conopophagids has not been examined.

The single most distinctive and conspicuous aspect of gnateater morphology must be the white or silvery plumes present in the postocular region, at the posterior end of the superciliary stripe. Only the Black-cheeked Gnateater lacks these, although, as mentioned above, some individuals of that species do, in fact, show a few white feathers in this region of the head. While these postocular plumes are more developed on males, females of most species also possess them. The plumes are, for most of the time, largely concealed by the overlying crown feathers. Foraging members of a pair seem to employ momentary exposure of them as a means of maintaining visual contact in the dark forest understorey. When the need arises, however, the birds can raise the crown feathers and erect the plumes laterally and slightly upwards. These actions seem to be reserved for interactions between pair-members or aggressive encounters at territorial boundaries (see General Habits).

Despite the fact that Conopophagidae is a relatively poorly studied family, it so happens that the cloacal temperature of one of its species, the little-known Hooded Gnateater, has been checked. One individual registered 39.8°C.

## Habitat

Gnateaters almost certainly evolved in humid, upland forest habitats. All of them are denizens of the understorey, occurring in both level and hilly terrain, and showing no preference for the proximity of water.

Most of the eight recognized species frequent areas with a fairly dense growth of herbaceous and woody plants, which is nevertheless passable by a human being on foot. Some species, however, notably the Black-bellied Gnateater and Slaty Gnateaters, keep to impenetrable thickets of vegetation, such as light gaps and forest borders choked with bamboo or other primitive grasses and thin, tangled vines. Those taxa occurring in Amazonia are inhabitants of *terra firme* forest, which is rarely, if ever, flooded, and only marginally enter the seasonally flooded forest known as *várzea*. No conopophagid species occurs regularly in *igapó*, which is almost continuously flooded forest in blackwater drainages, or in such low-stature, climax Amazonian habitats as *campina/campinarana/varillal* forest.

Tall second growth of upland forest, so long as it is not isolated from continuous forest, usually holds some gnateaters (but see Status and Conservation). Similarly, openings within forest created by selective logging, road and trail construction, and natural landslides are usually colonized soon after a reasonably dense regrowth of vegetation has appeared.

Rainforest in the upper tropical zone of the Andes is inhabited by two species, the Slaty and Chestnut-crowned Gnateaters, while the Rufous Gnateater of eastern Brazil occurs from the foothill forests of the Serra do Mar up to tree-line bamboo thickets on the highest peaks. Away from the humid slopes of the mountains in south-eastern Brazil, however, the Rufous Gnateater is found in evergreen, semi-humid woodlands (*brejos*) on certain uplands in north-eastern Brazil, and in more xeric gallery forest around the eastern and southern rim of the Brazilian Planalto Central. The only other conopophagids that inhabit semi-humid, or semi-deciduous, forest are the Hooded Gnateater, in the drier, eastern half of its range, and the Black-cheeked Gnateater, in the rainshadow of the Serra do Mar in interior Rio de Janeiro state. None of the gnateaters occurs in deciduous woodland.





The **Rufous Gnateater** nests during the austral spring, with records from August to January in southern Brazil and September to November in northern Argentina. Following the general conopophagid plan, the nest cup is 6-7 cm in diameter and 4-5 cm in depth. Outside dimensions of the entire structure are 10-14 cm wide by 7-10 cm deep. Three nests collected in São Paulo, Brazil, weighed from 21 g to 37 g. Both sexes incubate, the females taking the lead role at night and the males sitting for one to four hours more than females during the day. From the small number of nests that have been found, normal clutch size appears to be two. After the eggs hatch, both parents brood and feed the nestlings.

[*Conopophaga lineata vulgaris*,  
Cotia, São Paulo, Brazil.  
Photo: Dante Buzzetti]

## General Habits

Published information on most species of gnateater is sketchy and, in some instances, contradictory, and, as a result, the Conopophagidae ranks among the least-known of Neotropical bird families. This is easily understood, because most of the species in the family, despite being about as common as most other small birds living in the same habitats, are only infrequently encountered.

As is true of most understorey birds in Neotropical rainforest, the gnateaters most often reveal their presence by alarm or disturbance calls, or by song. All eight species sing fairly frequently early in the morning during the breeding periods, beginning before daylight has penetrated the understorey, and they usually sing at least a couple of times around dusk. Singing is also heard through most of the day, but is sporadic in occurrence.

Gnateaters are not particularly shy or retiring. Once located, and if the intervening vegetation is not too dense, individuals can usually be followed and watched for several minutes or more. Indeed, they can at times be rather conspicuous. During low aerial chases, for example, males often erect their white or silvery postocular tufts briefly while pursuing apparent females through the understorey. These dashing pursuits are usually accompanied by harsh or piercing monosyllabic calls, and sometimes also by bursts of loud whirring sounds made with the rapidly beating wings (see Voice). Similarly, in intraspecific encounters at territorial boundaries, the crown feathers are raised while the postocular plumes are erected to quite dramatic effect, forming glaring, bushy tufts of white which look like silvery horns sticking out on the dark head.

Gnateaters are always seen near the ground, but they are not terrestrial birds. In fact, they spend relatively little time directly on the forest floor, and they do not move from one site to another by walking or hopping. When they do make very short movements on the ground, these are accomplished by hops rather than by strides or steps. The gnateaters do, however, obtain most of their food from vegetation on the ground (see Food and Feeding). They perch on horizontal branches, vines and logs, or on similar but sloping substrates with an incline mostly of less than

45 degrees, maintaining a slightly hunched posture. Individuals actively foraging or involved in interactions with others regularly perch for a few seconds on thin, vertical stems, but gnateaters seem never to perch on the sides of large, vertical trunks. The birds move between foraging spots in short, low flights.

A frequent action of conopophagids is that of flicking the wings shallowly in a lateral and slightly upward direction. This tiny movement is performed almost constantly during routine foraging, and may become much exaggerated when the bird is agitated. Gnateaters do not exhibit any stereotyped tail movements, and they do not rock the body on stationary legs or expand and contract the body feathers in the manner of some antpittas of the genera *Grallaricula* and *Hyllopezus*.

All members of the family remain in pairs throughout the year, and are not sociable birds. They do not join mixed-species flocks of other understorey birds, even when these are passing directly through the territory. Nor should they be included in the roster of bird species which follow army ants. While there are a few published reports and scattered observations of one or a pair foraging at an ant swarm, these are the exception rather than the rule, and probably represent opportunistic behaviour of individuals rather than any evolutionarily significant adaptation or even a behavioural tendency.

Very little is known about the roosting behaviour of this family. An adult male Chestnut-belted Gnateater was found sleeping on a horizontal vine about 10 cm in diameter and about a metre above the ground. This was in a fairly open situation near a tree trunk, rather than being inside a dense thicket or beneath shielding vegetation.

Head-scratching is accomplished by the indirect method, with the foot brought up over the wing, although not all conopophagid species have been observed to perform this behaviour.

## Voice

Like the Formicariidae, the gnateaters have a limited vocal repertoire. All species have a song and two or three variations of a





Most of what is known about the breeding biology of gnateaters is based on a limited sample of nests from only a few of the species. As these photos show, **Black-cheeked Gnateaters** have biparental care at the nest, a trait that seems to hold true for conopophagids in general. Incubating adults may sit very tight on the nest, apparently relying on camouflage to escape detection by potential predators, and sometimes allowing humans to reach out and nearly touch them before flushing. In one such situation, an observer approached to within 5 cm of a Black-cheeked Gnateater nest before the adult flew to the ground, where it proceeded to perform a broken-wing distraction display. The frequency of this display intensified over time, as the young developed in the nest. In common with many bird species in the tropics, nestling gnateaters are sometimes parasitized by flies. In one documented case, both Black-cheeked Gnateater nestlings had been parasitized, the larger one carrying six larvae and the smaller one twice that number.

[*Conopophaga melanops melanops*,  
Parque Marumbi,  
Paraná, Brazil.  
Photos: Haroldo Palo]



monosyllabic call. All except the Black-cheeked Gnateater also occasionally deliver a rather loud, staccato chattering sound. Both sexes are capable of making all sounds, but the females rarely sing, although they will do so, quietly, near the nest.

Few vocalizations have been described. Songs are of two distinctly different types, and these correspond fairly well to the two major lineages in the family as proposed above (see Systematics). The Chestnut-crowned, Slaty and Ash-throated Gnateaters share a series of two to eight irregularly spaced, rather frog-like, somewhat tremulous "greep!" or "whrick!" notes on a level frequency. The duration of the series is variable, but longer ones last about five seconds or so. The song of the Black-bellied Gnateater is similar, but its notes are quite harsh, and are reminiscent of the alarm calls of the two *Pittasoma* antpittas. Rufous Gnateater songs reveal a much greater geographical variation than is the case for those four species, but in most areas, and especially in the northern portion of the range, it gives a slightly rising series of whistled notes delivered slowly enough to be counted easily. The song of the Hooded Gnateater sounds like an accelerated version of that of the Rufous Gnateater. Although its song is similar in pace to those of some of the taxa in the "Chestnut-belted Gnateater complex", the quality of the individual notes and some of its calls point to closer affinities with the Rufous Gnateater.

The second song type characterizes all the members of the "Chestnut-belted Gnateater complex". It is a much more closely spaced series of notes, delivered much too quickly to be counted, each series lasting about two seconds and having a drier, chattered quality. There is some significant vocal geographical variation within the Chestnut-belted Gnateater. The Black-cheeked Gnateater has a song consisting of a tightly spaced series that rises slightly through the second half, sometimes ending with a few higher and fractionally more widely spaced notes. This species' song, however, stands apart from the songs of the taxa currently included in the Chestnut-belted Gnateater in that it is much longer, lasting about five to eight seconds. As alluded to earlier (see Systematics), the song of the Black-cheeked Gnateater recalls that of the Rufous-capped Anthrush of the Formicariidae.

As mentioned a couple of paragraphs previously, the song of the Rufous Gnateater exhibits rather remarkable geographical variation. The northern populations utter a relatively slowly paced series of up to 15 slightly rising whistled notes, the final ones usually somewhat louder, whereas the southernmost individuals emit a faster series of about 30 notes sounding much more like a rapid trill. A number of intermediate song types and additional variations also occur, with differences in the structure of the notes and the pace of the entire song. In the southern part of the species' range, for instance, at least three different song types have been noted in the region southwards from the Brazilian states of Mato Grosso do Sul and Espírito Santo. Since this corresponds with the supposed range of the race *vulgaris* of the Rufous Gnateater, there may well be some grounds for re-examining the taxonomy of this species at the subspecific level (see also Systematics).

Calls are usually harsh notes or thin, piercing shrieks delivered once every few seconds, and are heard most frequently in the context of alarm or as a response to disturbance. In general, the calls given by the members of the proposed "Rufous Gnateater complex" are sharper and more penetrating than the lower, gruff notes characteristic of the "Chestnut-belted group". None of the gnateaters is known to give multisyllabic rattles or scolds, but all species except the Black-cheeked Gnateater regularly emit a fairly loud chattering series, often during the wing-whir described in the following paragraph. Peeping food-solicitation calls and squeaking sounds during feeding have been described for nestling Rufous Gnateaters, and some other quiet "chittering" vocalizations for adults at the nest.

All but one of the Conopophagidae also produce mechanical wing sounds in flight. These are loud whirring sounds made with the rapidly beating wings, the outer primaries of which are modified on males (see Morphological Aspects). Apparently, only the males are capable of producing these sounds, which are sometimes heard in loud bursts as the male pursues the fe-

male in low flight through the understorey. As mentioned above, the Black-cheeked Gnateater is the only member of the family that does not produce wing noises. Furthermore, it is interesting to note that neither of the family's closest relatives, the Formicariidae and the Rhinocryptidae, produces mechanical wing sounds, and the phenomenon is also completely lacking among the typical antbirds (Thamnophilidae).

## Food and Feeding

Gnateaters forage near and on the forest floor, seldom rising to more than about 1.5 m above the ground. Their food consists almost entirely of arthropods, and it appears that most prey are quite small, less than 5 mm long. A wide variety of such items has been recorded, and includes spiders, caterpillars and other insect larvae, and adults of beetles (Coleoptera), grasshoppers (Acrididae) and other Orthoptera, ants and other Hymenoptera, cockroaches (Blattodea), worms and moths. In addition, Willis and colleagues have documented two quite different food items for the Rufous Gnateater. One of these was a small frog fed by an adult to a nestling, and the other a blue berry of the genus *Coccocypsellum* (Rubiaceae) eaten by an adult.

Most attack manoeuvres are of two types. The first involves a descent from an above-ground perch to take prey from the ground, the final action sometimes performed with rapid lunges. The second method consists of reaching and gleaning from nearby foliage, stems and trunks. Brief, upward-directed aerial sallies are also carried out, but this type of foraging behaviour is far less common.

Gnateaters obtain most of their prey from the leaf litter and other vegetation on the ground. A typical foraging move is initiated from a perch within about one metre of the ground, from where the bird scans the area below for insect or other arthropod prey. It may remain almost motionless for several minutes as it watches. When an item is spotted, the gnateater descends to the ground with a short flight or with one or two hops on branches, and then makes the capture. While on the ground, an individual will occasionally pick up or brush aside a leaf in search of a prey item, or make an exploratory hop or two, but gnateaters usually do not remain directly on the ground for more than several seconds. Scanning stations are held for less extended periods during more active bouts of foraging.

Large prey items, such as some orthopterans and lepidopteran larvae with a length in excess of about 10 mm, are usually beaten vigorously into submission on a branch or vine before being swallowed whole. Gnateaters appear not to use the feet in order to stabilize or otherwise manipulate captured prey items.

## Breeding

Generalizing from the few cases studied, and the fact that most conopophagid species are found in pairs throughout the year, gnateaters appear to be monogamous.

The two species occurring in the Atlantic Forest of eastern Brazil show highly seasonal breeding activity, with males singing conspicuously in the "spring" period. For example, the breeding period of the Rufous Gnateater in southern Brazil is August to January, while active nests of the Black-cheeked Gnateater have been found in coastal Paraná in late October, with young fledging in mid-November, and in southern Bahia in early November. The season has passed by March, when the birds are usually completing moult, and it is unusual to hear either species singing spontaneously in the period from March to July.

In French Guiana, the breeding season for the Chestnut-belted Gnateater has been given as March and April, with nests or young fledglings reported in both months. Evidence of breeding is especially poorly documented for the Amazonian and Andean gnateaters, but singing activity is highest during the dry periods of the annual cycle, at which times nesting is probably concentrated. A single active nest of the Hooded Gnateater was found in the dry season, April, in eastern Pará, north-east



This **Rufous Gnateater** is delivering a prey item to its young. Observations by the photographer revealed that both parents fed the young, and that they always approached the nest silently. Equally, on departure they would slip surreptitiously to the ground, and then make off carefully in a series of low, short flights. In accordance with this secretive behaviour, no vocalizations were made before, during or after feeding. Given that gnateaters go to great lengths to build an inconspicuous nest, it makes perfect sense that their behaviour does as little as possible to advertise its presence.

[*Conopophaga lineata lineata*,  
Pedra Talhada State Park,

Alagoas, Brazil.  
Photo: Anita Studer]



Brazil, while active nests of the Ash-throated Gnateater have been located in mid-August in eastern Ecuador and in late November in Peru.

Few nests of the Conopophagidae have been recorded, and those of several taxa apparently remain unknown. Nonetheless, among the handful that have been described, there seems to be a remarkable uniformity in architecture and placement. The basic structure is a shallow cup, placed in a supporting network or fork of thin branches of a sapling or, less frequently, among herbaceous plants. The cup is camouflaged with numerous large leaves, some fresh and some dead, with protruding twigs around the rim. Thus, it appears somewhat flattened, and the overall effect is that of a cluttered shelf of debris lodged atop a small plant or plants. The cup, the edges and rim of which are not woven around or in any other way attached to the supporting twigs, is usually constructed largely of wiry, blackish "rootlets" or lichens (*Marasmius*).

Those nests which have been measured ranged from 5.5 cm to 7 cm in internal diameter, with a depth of 4-5 cm, the outside dimensions of the whole structure being roughly 10-14 cm wide by 7-10 cm deep. Three nests of the Rufous Gnateater in São Paulo, Brazil, weighed 31 g, 21 g and 37 g.

The height above ground at which conopophagid nests are placed ranges from about 15 cm to nearly 2 m, although most have been situated less than 1 m up. No nests of this family have been found on the ground. Although gnateaters seem to prefer to build their nests in somewhat open places in the forest, without much overhanging or otherwise concealing vegetation, it also seems plausible that the few nests that have been discovered were noticed because they were along trails or in other relatively obvious situations.

The clutch size of gnateaters appears to be two. The eggs vary slightly in markings, but have been described as being rusty, buffy, yellowish or cream-coloured, with darker brownish speckles concentrated in a ring around the larger end. They measure about 20-24 × 17-18 mm, and those of the Rufous Gnateater weigh 2.8-4 g.

The incubating or brooding gnateater apparently relies heavily on the camouflage of the nest and its own plumage as a means

of escaping detection, as it usually does not flush from the nest until it is almost touched by the observer. At a nest of Black-cheeked Gnateaters in Paraná, in south-east Brazil, the sitting adult allowed the observers to approach to as close as about 5 cm before flushing to the ground, where it performed a distraction display. These displays, which took the form of feigning a broken wing, intensified during the final stages of the nestling period, as the young grew bigger.

At three nests of Rufous Gnateaters, E. O. Willis and colleagues noted that the sexes alternated incubation stints during the day, with the female sitting on the eggs at night, and that the male in each case incubated for a total of one to four hours more during the daytime than did his mate. Both sexes also brooded and fed the nestlings. Faecal sacs were usually consumed by the parents except during the latter stages of the nestling period, when the adults flew away with the sacs and dropped them. The female alone fed the young after fledging, although Willis and co-workers suggested that, in a normal brood of two young, the male would probably assist in this task. One fledgling was cared for by the female for 45 days after it had left the nest.

At these same three Rufous Gnateater nests, the young were naked and blackish-skinned on hatching, and had a bright orange gape. Pinfeathers were evident on the feather tracts as early as the third day, and two days later the chicks were first heard to emit peeping sounds. On the following day, the back feathers were opening at the tips. The chicks' eyes were open by the eighth day, and from the ninth day onwards the youngsters were large and were active in the nest, possessing well-developed head feathers and open tips of the remiges, and vocalizing with peeping sounds. One young was observed to leave the nest on day 14, and two weeks later it had reached nearly adult size.

F. Straube noted that two nestling Black-cheeked Gnateaters had been parasitized by flies, possibly of the genus *Philornis*. The larger of the two harboured six larvae, while the other had twelve. One of the young was still in the nest a week later, and almost ready to fledge. Such parasitization of nestling forest birds by flies seems to be quite common.





These **Black-cheeked Gnatcatchers** are attending their brood of nestlings. Both parents participate in brooding, bringing food to the young, and removing faecal sacs. The breeding biology of this species has not been examined in great detail, but based on studies of other gnatcatchers, the nestling period is likely to last about 14 days, and the fledglings may remain with one or both parents for another six weeks or so. The male Black-cheeked Gnatcatcher has a conspicuous black mask, whereas the female has no black on her face and somewhat resembles a Rufous Gnatcatcher (*Conopophaga lineata*). This species is the sole member of the *Conopophagidae* that does not sport white or silvery postocular tufts, although a few males exhibit two or three white feathers behind their eyes.

[*Conopophaga melanops nigrifrons*,  
Alagoas, Brazil.  
Photos: Anita Studer]



## Movements

Gnateaters are entirely non-migratory but, beyond this, little is known of their dispersal patterns, tendencies or capabilities.

Willis and colleagues found that pairs of Rufous Gnateaters living in a remnant patch of forest totalling 21 ha in extent were "relatively territorial" during the breeding season, with home ranges measuring about 150 m in diameter, and territories of about 100 m in diameter. Outside the breeding season, presumed juveniles and some adult Rufous Gnateaters frequently trespassed on territories of settled birds, and members of pairs seemed to wander separately. They also reported that a single juvenile, after having become independent, remained in a corner of the parental territory for at least 80 days while its parents stayed in other parts of the territory. Of course, the situation in continuous habitat could be different, especially in light of the fact that those same researchers noted that the density of Rufous Gnateaters in their small plot was higher than that found in unbroken forest.

Some unpublished, quantified data pertaining to the Chestnut-belted Gnateater near Manaus, in northern Brazil, have kindly been supplied by P. Stouffer. Four years of spot-mapping data indicated that this species occurs at a density of about three pairs per 100 ha in continuous, undisturbed forest, and that four radio-tagged birds followed over a period of two months had a mean territory size of 6.28 ha. This implies that much apparently suitable habitat is not occupied by the species, although Stouffer also suspected that the gnateaters could have been staying within a fairly circumscribed territory for a few weeks, then moving to a different area, thus using larger home ranges. The results of his brief study indicated a high turnover of territories compared with that of other understorey birds, and he estimated that about 60% of Chestnut-belted Gnateater territories occupied in a given year are then occupied in the following year.

## Relationship with Man

Being obscure little spirits of the dim forest understorey, the gnateaters have ranked about as low as it is possible to get on the attention list of humans. In many areas of Amazonia, for instance, indigenous and other local people do not differentiate them from other small birds. It is true to say that gnateater vocalizations have received more notice from the populace at large than have the birds themselves. Their calls have inspired the Brazilian names: *chupa-dentes*, meaning tooth-sucker, and *cuspidor*, or spitter.



A study of **Chestnut-belted Gnateaters** near Manaus, revealed a density of three breeding pairs per 100 ha of undisturbed forest. Four radio-tagged birds had a mean territory size of about 6 ha, suggesting that a good deal of apparently suitable habitat was unoccupied. The same study showed that this gnateater is one of the first bird species to disappear after forest fragmentation.

[*Conopophaga aurita aurita*, Montagne des Serpents, Roura, French Guiana. Photo: Olivier Tostain]



Without doubt, the subset of people most concerned with the whereabouts and wellbeing of the members of this avian family are birdwatchers and ornithologists, who may go to great lengths and expense to catch a glimpse of a gnateater, or to gather scarce data on the haunts and habits of these birds. Willis and colleagues felt that Rufous Gnateaters which had been captured and ringed became much more wary of humans, and that one nest was abandoned as a result.

## Status and Conservation

All of the gnateaters are common or fairly common birds in appropriate habitat. None of the eight species is in danger of extinction. Many preserves in South America, some well protected and others little more than names in files, harbour one or more species of gnateater.

The smallest conopophagid populations are probably those of some forms of the Rufous Gnateater in north-eastern and east-central Brazil. These occur in isolated, semi-humid forests of limited extent. For instance, the subspecies *cearae*, contrary to published accounts, is known with certainty only from the Serra de Baturité, a small range of hills covered in evergreen forest and surrounded by deciduous *caatinga* scrub in northern Ceará, near the north-east coast of Brazil. Its world range is minuscule, but it nevertheless remains quite common.

Some "populations" of gnateaters may be artificially but no less effectively isolated by the clearing of habitat. The studies undertaken in northern Brazil by Stouffer and colleagues, who examined the effects of forest fragmentation near Manaus, revealed that the Chestnut-belted Gnateater is among the first species to disappear from forest which has become fragmented by anthropogenic activities. It is possibly also the conopophagid species that is most susceptible to habitat alteration of any kind.

So far as the gnateaters in general are concerned, the Manaus studies are more to the point: fragmentation and destruction of habitat are the major threat facing their survival. On the other side of the ledger, it should be remembered that all of the members of this family are to a greater or lesser extent partial to dense, tangled growth, and most species probably benefit from such practices as selective logging and the construction of trails and roads that do not result in widespread loss of the forest habitat.

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The **Chestnut-crowned Gnateater** occurs between 700 m and 2000 m above sea-level in the Andean foothills from Colombia south through Ecuador to Southern Peru. It is considered to be uncommon and local in distribution, in part because it is easily overlooked in the dense tangles that it favours. On balance, all gnateater species are reasonably easy to encounter in areas where large blocks of suitable habitat have remained intact, and no species is thought to be in serious danger of extinction.

[*Conopophaga castaneiceps chapmani*, Río Pauya, Loreto, Peru. Photo: Dan Lane]





PLATE 77

inches 4  
cm 10



# Genus *CONOPOPHAGA* Vieillot, 1816

## 1. Chestnut-belted Gnateater

### *Conopophaga aurita*

**French:** Conophage à oreilles blanches **Spanish:** Jejenero Orejudo  
**German:** Rostbrust-Mückenfresser

**Taxonomy.** *Turdus auritus* J. F. Gmelin, 1789, Cayenne.

See page 734. Possibly closest to *C. melanops*. Precise range limits of most races unclear. S of Amazon, marked variation in plumage and also in voice: abrupt change of pace and note structure (and, thus, sound quality) across R Madeira/Tapajós interfluvium. Race *snethlageae* distinctive; possibly best treated as a separate species, with *pallida* as a race or a synonym thereof, representing only one extreme of a clinal range of variation. Some confusing variation within range of *australis*, as some specimens from R Purus (W Brazil) have appearance approaching that of *snethlageae*. Six subspecies currently recognized.

#### Subspecies and Distribution.

*C. a. aurita* (J. F. Gmelin, 1789) - Guyana E to French Guiana and S to N Brazil (Manaus E to Amapá).

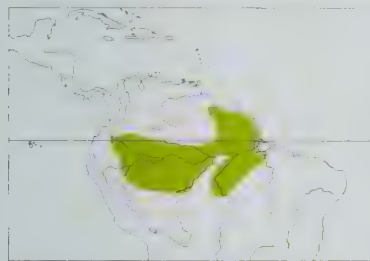
*C. a. inexpectata* J. T. Zimmer, 1931 - SE Colombia and NW Brazil, S & E along W bank of R Negro.

*C. a. occidentalis* Chubb, 1917 - NE Ecuador and NE Peru (E of R Napo).

*C. a. australis* Todd, 1927 - S of R Amazon from NE Peru (S to Ucayali) to W Brazil (E to R Madeira, S to N Acre and N Rondônia); population E of R Madeira in NW Rondônia provisionally placed here.

*C. a. snethlageae* Berlepsch, 1912 - Brazil S of R Amazon, from both banks of lower R Tapajós and E bank of R Teles Pires E to C Pará; not known to occur in area W towards R Madeira.

*C. a. pallida* Snethlage, 1914 - C Pará E to W bank of R Tocantins.



**Descriptive notes.** 10.5-13 cm; 21-26 g. Male of nominate race has crown to nape rufous-brown, white postocular plume; forehead and rest of head black; upperparts brown, feathers tipped blackish; throat black, breast chestnut, belly white; iris dark brown; bill black, tip of lower mandible sometimes slightly paler; legs grey. Female lacks black in plumage, has chin and throat light rufous to whitish, smaller postocular plume, lower mandible pale. Juvenile (*inexpectata* and *snethlageae*) has extensive blackish bars and chestnut tips on crown feathers, dark centres of back feathers, dark brown upwing-coverts with broad chestnut

tips and fine black margins, weak suggestion of barring on flanks. Race *inexpectata* is similar to nominate, but belly usually less white; *occidentalis* resembles previous, but less black scaling on back; *australis* has more black on throat, forming bib, buffish belly; *snethlageae* has black scaling on back much reduced, sometimes lacking, more extensive black below; *pallida* differs from previous in usually showing some dark dorsal scaling, even more black and no chestnut below, belly more whitish. **VOICE.** Song a rapid, evenly paced series of nearly identical notes at c. 3 kHz, lasting 2-3 seconds, and sounding like a rattle; *snethlageae* and *pallida* significantly slower-paced, and individual notes about twice as long as those of other taxa; calls include various harsh notes and agitated chatter. Male in flight occasionally produces fairly loud burst of whirring sound with outer remiges, associated with aggression or courtship.

**Habitat.** Humid lowland forest. Most frequent in well-drained, tall *terra firme* forest with fairly dense growth of understorey plants; seems to avoid densest thickets, or not especially attracted to them. Generally does not occur in regions with extensive bamboo, and not partial to bamboo where it is present. S of R Amazon, may be concentrated in or restricted to blackwater drainages, where appears to replace *C. peruviana*. Lowlands, locally to 700 m in Pará (Serra dos Carajás); recently recorded at 1300 m in W Guyana.

**Food and Feeding.** Small arthropods. Forages on and near the ground; food items captured with short reaches and gleans from foliage and leaf litter.

**Breeding.** Little known; season Mar-Apr in French Guiana, when a male was photographed while incubating or brooding, and males observed feeding fledglings; at Manaus (Brazil), two adults gave distraction displays in Feb, as if they had nest or young, and in Jul one well-grown young followed female through forest calling repeatedly. A nest was situated among the multiple thin trunks of a small understorey palm; another was open cup of blackish-violaceous fungus fibres 7.5 cm wide, 2.8 cm deep, built into pile of dead leaves accumulated on a large leaf of the palm *Attalea attaleoides*, c. 80 cm above ground. One clutch of 2 eggs, pale ochre with pinkish-brown ring at large end; 22.2-22.9 × 17.5 mm. Mean territory size 6.28 ha in N Brazil (Manaus).

**Movements.** Sedentary, or small-scale shifts of territory within a somewhat larger home range. For the nominate race, it has been estimated that 60% of territories occupied in a given year are occupied in the following year.

**Status and Conservation.** Not globally threatened. Uncommon through most of Guianan portion of range; recently recorded at Mt Kowa, on Potaro Plateau, representing range extension to W. Uncommon in Ecuador, where known from a few sites in N including e.g. Cuyabeno Reserve, La Selva, Tigre Playa. Uncommon and local in Peru, but fairly common at the ACEER Lodge site on E bank of lower R Napo. In Brazil, fairly common to common in the BDFFP INPA forests of N Manaus, where density c. 3 pairs/100 ha in continuous, undisturbed forest; uncommon to rare in E portion of Jaú National Park, in Amazonas, and fairly common but local in sandy-soil forest of Serra do Divisor National Park, in Acre; very few records from R Madeira drainage, but fairly common from lower R Tapajós E to C Pará, where present in Carajás area and in Caxiuanã National Forest (Ferreira Penna Scientific Station of the Goeldi Museum in Belém). This species seems to have a somewhat discontinuous presence S of R Amazon; for example, race *australis* is highly patchy in occurrence, while *snethlageae* is currently not known W to the R Madeira throughout the interfluvium and appears to be absent from W bank of R Teles Pires.

**Bibliography.** Cohn-Haft *et al.* (1997), Dunning (1993), Goodfellow (1901), Haverschmidt & Mees (1994), Hilty & Brown (1986), Meyer de Schauensee (1966, 1982), Oniki & Willis (1982), Oren & Parker (1997), Peres & Whittaker (1991), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Schubart *et al.* (1965), Sick (1985c, 1993), da Silva *et al.* (1990), Snyder (1966), Stratford & Stouffer (1999), Thiollay & Jullien (1998), Tostain (2002a), Tostain *et al.* (1992), Whittaker & Oren (1999), Willis (1985c), Zimmer, J.T. (1931a), Zimmer, K.J., Parker *et al.* (1997).

## 2. Black-cheeked Gnateater

### *Conopophaga melanops*

**French:** Conophage à joues noires **Spanish:** Jejenero Carinegro  
**German:** Rotscheitel-Mückenfresser

**Taxonomy.** *Platyrrhynchos melanops* Vieillot, 1818, South America; restricted to near Rio de Janeiro, Brazil.

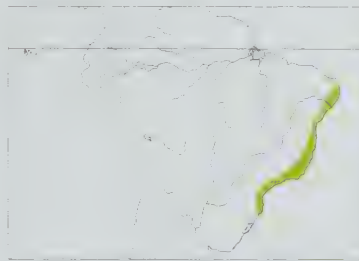
See page 735. Possibly closest to *C. aurita*. Races not clearly defined either morphologically or geographically, and taxonomy confused. Contrary to some published statements, black frontal band of male present in all populations; this band perhaps tends to be broader in N than in S, but very variable even at a single locality, and so unreliable for any taxonomic diagnosis; also, variation in other plumage characters, e.g. presence of spots on wing-coverts or extent of grey or white in underparts, shows no apparent geographical pattern. Race *perspicillata* possibly not tenable. Further study, especially of long series of specimens, needed in order to clarify situation. Three subspecies provisionally recognized.

#### Subspecies and Distribution.

*C. m. nigrifrons* Pinto, 1954 - coastal NE Brazil from Paraíba S to Alagoas.

*C. m. perspicillata* (M. H. K. Lichtenstein, 1823) - coastal Bahia; recent records in adjacent Sergipe, to N, presumably of this race.

*C. m. melanops* (Vieillot, 1818) - SE Brazil from Espírito Santo S to Santa Catarina.



**Descriptive notes.** 10.5-12 cm; three birds averaged 20.1 g. Male has rufous cap with orangish border, black forehead and facial mask, sometimes a few white feathers in postocular region, prominent white throat; upperparts brown, wing-coverts more rufous and sometimes with pale tips; underparts below upper breast grey, flanks tinged orange-buff, belly whitish, extent of grey and white variable; iris dark brown; bill black; legs grey-pink. Female lacks black mask, has grey postocular stripe, orange-rufous underparts with paler throat and belly. Juvenile apparently unknown. Race *nigrifrons* typically has

broader back frontal band, but much individual variation throughout range, and validity of all racial features requires revision (see page 735). **VOICE.** Song a tightly spaced trill at 1.5-3.5 kHz, becoming slightly louder as it rises and slows fractionally through final part, the whole lasting c. 5-8 seconds, sound can be approximated by dragging the thumbnail along teeth of a comb; only other vocalization heard regularly is ringing "zhink!" or "zhweenk!"

**Habitat.** Interior and edge of dark, often mossy Atlantic Forest, frequently along streams or in ravines; also dense second growth. Also in drier forest remnants in valley of R Paraíba do Sul, in Rio de Janeiro state. Sea-level to c. 800 m.

**Food and Feeding.** Small arthropods. Forages on or near ground; takes items from foliage and leaf litter by making short reaches and by gleanings.

**Breeding.** Oct and Nov in S half of range. Nest in S Bahia was 0.8 m above ground in small tree, another in Paraná 0.6 m above ground and supported by *Heliconia* stems. Clutch 2 eggs, beige or buffy with small brownish speckles concentrated in ring around larger end, in Paraná 22.5-22.7 × 17-17.5 mm; incubation by both sexes, period not known; both also brood and feed chicks, nestling period c. 2 weeks; sitting adults allowed close approach before leaving nest, then performing broken-wing distraction displays on ground, displays becoming more intense during final stages of nestling period. At the Paraná nest, both nestlings had been parasitized by flies, possibly of genus *Philornis*, larger chick harbouring 6 larvae, the other 12.

**Movements.** Sedentary.

**Status and Conservation.** Not globally threatened. Generally common. Fairly common to common at Murici Ecological Reserve, in Alagoas, at Una Biological Reserve, in Bahia, at Sooretama Biological Reserve and Linhares Natural Reserve, in Espírito Santo, at Tijuca National Park and the lower elevations of Itatiaia National Park, in Rio de Janeiro; occurs also in several other protected areas. Fairly common also in the Ubatuba region of coastal N São Paulo and the Guaracema area of Paraná. As other birds of the lowland Atlantic Forest, it has suffered habitat loss on a massive scale; this has been particularly severe in the valley of R Paraíba do Sul, in interior Rio de Janeiro. Tolerates second growth, so long as this fairly dense, and persists at various places even within residential neighbourhoods of Rio de Janeiro.

**Bibliography.** Alves & Duarte (1996), Buzzetti (2000), Cordeiro (2001), Dunning (1993), Goerck (1999a), Ihering (1900), Meyer de Schauensee (1966, 1982), Naka *et al.* (2002), Naumburg (1937), Pinto (1954a), Pinto & Camargo (1961), Ridgely & Tudor (1994), Schubart *et al.* (1965), Scott & Brooke (1985), Sick (1985c, 1993), Straube (1989), Willis (1985c).

## 3. Rufous Gnateater

### *Conopophaga lineata*

**French:** Conophage roux **German:** Rotkehl-Mückenfresser **Spanish:** Jejenero Rojizo  
**Other common names:** Silvery-tufted Gnateater; Caatinga Gnateater (*cearae*)

**Taxonomy.** *Myiagrus lineatus* Wied, 1831, near Vitória da Conquista, Bahia, Brazil.

See page 735. Apparently closest to, and perhaps forms a group with, *C. roberti*, *C. peruviana*, *C. ardesiaca* and *C. castaneiceps*, possibly also including *C. melanogaster*. Geographical limits of races uncertain; complex vocal variation, but the extent to which this corresponds with published ranges of named races is not known; in addition, plumage variation minimal throughout S half of



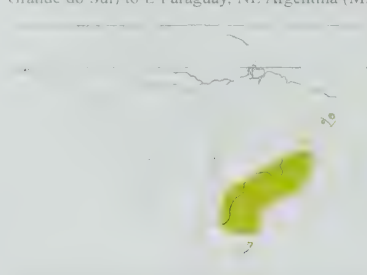
range; much additional work and taxonomic revision required. Race *cearae* morphologically and vocally distinctive, and may merit species status. Described forms *anomalous* from Paraguay (Alto Paraná) and *rubicula* from Brazil (Veadeiros, in Goiás) subsumed in, respectively, *vulgaris* and nominate. Also, two specimens from E Brazil (Ibiquera, in C Bahia) exhibit distinctive plumage differences, and possibly represent an unnamed taxon. Three subspecies provisionally recognized.

#### Subspecies and Distribution

*C. l. cearae* Cory, 1916 - NE Brazil in N Ceará (Serra de Baturité); affinity with populations in Pernambuco and N Bahia requires confirmation.

*C. l. lineata* (Wied, 1831) - Pernambuco S to S Bahia, and S & W to Goiás; also N Mato Grosso do Sul (Serra das Araras).

*C. l. vulgaris* Ménétrières, 1835 - SC & SE Brazil (S Mato Grosso do Sul and Espírito Santo S to Rio Grande do Sul) to E Paraguay, NE Argentina (Misiones, Corrientes) and E Uruguay.



**Descriptive notes.** 11.5-14 cm; 16-27 g, mean of 11 birds 22.1 g. Male has rufous-chestnut crown, grey supercilium extending into silvery white postocular tuft, upperparts usually only slightly browner than crown (but crown noticeably more rufous-chestnut than back on specimens from Ibiquera, C Bahia); side of head, chin and throat, and breast rufous, whitish crescent-shaped patch on upper breast, flanks duller, large whitish belly patch (Ibiquera specimens paler below, throat more whitish, breast-crescent only weakly evident); iris dark brown; bill black, lower mandible yellowish or pinkish; legs greyish to yellowish.

ish-tinged. Female has white postocular tuft greatly reduced or absent. Juvenile has lightly streaked crown and back, buff-white postocular tuft, pale orange spots on lesser and median wing-coverts, occasionally also on greater coverts, mottled chest, faintly barred flanks. Race *vulgaris* is very like nominate, but generally darker rufous-brown above, no contrast between crown and back; *cearae* is distinctive, with more deeply orangish plumage, no or reduced white breast-crescent. Voice. Song a series of c. 5-15 sweet, whistled notes, rising slightly and usually ending with slightly louder notes, the whole lasting 1.5-4 seconds, at 2.5-3.5 kHz; also several variants, in far S of range more like a trill of c. 30 notes: calls include piercing "tchief!" or harder "tcheek!", and stuttered chatter of rapidly delivered scratchy notes lasting c. 1 second. Male in flight occasionally produces fairly loud whirring sound with outer remiges in aggression or courtship.

**Habitat.** Semi-humid, mostly evergreen woodland and gallery forest in NE and interior Brazil, regularly occurring in moderately well-developed second growth; also in more xeric gallery forest on E margins of Planalto Central, humid forest in SE of range, where fond of bamboo thickets and other dense growth. Race *cearae* restricted to upland evergreen forest (*brejo*). Mostly above 500 m, but down to below 300 m in far S; reaches edge of natural grassland, at c. 2400 m, on highest peaks in SE Brazil.

**Food and Feeding.** Takes small arthropod prey from foliage and leaf litter on or near the ground. Also, single records of an adult feeding a small frog to a nestling, and an individual eating a blue berry of the rubiaceae genus *Coccolysellum*.

**Breeding.** Breeds in Aug-Jan in S Brazil, often from Dec in São Paulo; late Sept to Nov in Argentina. Apparently monogamous. Nest built from near ground level to as high as nearly 2 m, often in relatively open place in understorey; three São Paulo nests had outer diameter (excluding protruding twigs and leaves) 10-14 cm, inner diameter 6.5-7 cm, internal depth 3.5-4 cm, external depth (excluding projections) 7-9 cm, weight (when dry) 21-37 g; territory diameter c. 100 m, home range c. 150 m. Clutch 2 eggs, pale buff or rusty with slightly darker spots around large end, 20-24 × 17-18 mm; female incubates at night and for part of day, but male incubated for 1-4 hours more per day than female, incubation period c. 2 weeks; both sexes brood and feed chicks, which fledge at c. 2 weeks; a juvenile had attained adult size 2 weeks later, but still had very short tail and small head and bill; one juvenile cared for by female for 45 days.

**Movements.** Sedentary; some poorly understood post-breeding dispersal.

**Status and Conservation.** Not globally threatened. Locally common. In SE Brazil (São Paulo), three nests in 21-ha remnant patch of forest. Common in Serra de Baturité, in Ceará (*cearae*). Known from only one locality in Alagoas, and no records from Sergipe; status of outlying population in N Mato Grosso do Sul (Serra das Araras) is unknown; uncommon to fairly common in humid hilly forest E of Boa Nova, Bahia, but absent from *mata-de-cipó* (drier, viny forest) there; uncommon in semi-deciduous gallery woodland in interior of range, e.g. at Brasília National Park, in Goiás. In S of range, common in Itatiaia and Serra dos Órgãos National Parks, in Rio de Janeiro, and also in Iguaçu National Park, at the latter in both Brazil and Argentina, although it seems more common in the dense bamboo tracts on Argentine side (Iguaçu National Park). In Paraguay, occurs in Ybicui National Park, Mbaracayú Forest Nature Reserve, and Estancia Itabó, La Golondrina and Estancia San Antonio Private Nature Reserves.

**Bibliography.** dos Anjos (2001a), dos Anjos & Schuchmann (1997), dos Anjos *et al.* (1997), Bencke & Kündel (1999), Brooks *et al.* (1993), Buzzetti (2000), Canevari *et al.* (1991), Chebez *et al.* (1999), Chubb (1910), Dunning (1993), Ferreira de Vasconcelos & Melo-Júnior (2001), Figueiredo *et al.* (2000), Fraga & Narosky (1985), Goerck (1999a), Gonzaga *et al.* (1995), Hayes (1995), Krügel & dos Anjos (2000), Lowen, Bartrina *et al.* (1996), Lowen, Clay *et al.* (1995), Machado & Lamas (1996), Marini & Durães (2001), Marini *et al.* (1997), Maurício & Dias (1998, 2000), Mazar Barnett & Pearman (2001), Meyer de Schauensee (1966, 1982), Motta-Júnior (1990), Naumburg (1937), Ofreg (1979a), Parrini *et al.* (1999), de la Peña (1988), Pinto & Camargo (1961), Ridgely & Tudor (1994), Saibene *et al.* (1996), Schubert *et al.* (1965), Scott & Brooke (1985), Sick (1965, 1985c, 1993), da Silva (1996), Willis (1985c), Willis & Schuchmann (1993), Willis *et al.* (1983).

## 4. Hooded Gnateater

### *Conopophaga roberti*

**French:** Conophage capucin

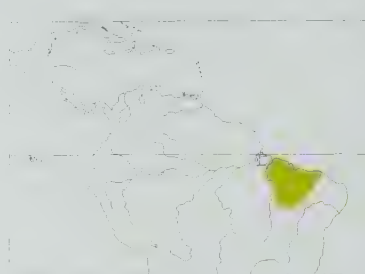
**German:** Östlicher Schwarzkopf-Mückenfresser

**Spanish:** Jejenero Encapuchado

**Taxonomy.** *Conopophaga roberti* Hellmayr, 1905. Igarapé Açu, Pará, Brazil.

Apparently more closely related to *C. lineata* than previously suggested. May be part of a group formed by that species along with *C. peruviana*, *C. ardesiaca* and *C. castaneiceps*, possibly also including *C. melanogaster*. Monotypic.

**Distribution.** NE Brazil S of R Amazon, from E Pará (E bank of R Tocantins) E to Piauí and W Ceará. **Descriptive notes.** 11-14 cm; 1 bird 20-8 g. Male has black head and neck, black continuing to lower breast; white postocular tuft, rich chestnut-brown upperparts; flanks grey, white belly patch; iris dark brown; bill black, lower mandible flesh-coloured; legs grey. Female has rufous crown, paler rufous ear-coverts; underparts grey, except for white throat and white belly patch. Juvenile apparently un-



known. Voice. Song c. 1-5 seconds long, a rapid, slightly musical, ascending series of notes at c. 3-5 kHz; calls include piercing "tchief!" and harder "tcheek!", and stuttered chatter c. 1 second long of rapidly delivered scratchy notes. Occasionally, a fairly loud whirring noise produced by outer remiges of male in flight, in context of aggression or courtship.

**Habitat.** Found in thickets and tangled growth at edge of humid rainforest at W end of range, as in region of R Tocantins and around Belém. Habitat becomes increasingly seasonally xeric towards E extremity of distribution; in W Ceará, inhabits edge and interior of tall woodland, mostly near treefalls and other densely vegetated places. Lowlands.

**Food and Feeding.** Small arthropods. Food taken from foliage and leaf litter on or near ground; items captured with short reaches and gleaned.

**Breeding.** Little known. A nest in E Pará virtually complete in mid-Apr; built by both sexes, 29 cm above ground atop some saplings, in relatively open place at edge of a dense thicket of vines and low palms, 4 m from edge of a trail; excluding protruding twigs and leaves, main bulk of nest was 10 cm wide and 10-5 cm deep, internal cup 7 cm wide and 4-5 cm deep.

**Movements.** Unknown.

**Status and Conservation.** Not globally threatened. Seems fairly common both in wet forest near Belém and in seasonally dry woodland in NW Ceará; in latter state, fairly easily found in the Ubajara National Park and the Serra do Ibiapaba in general.

**Bibliography.** Collar & Andrew (1988), Dunning (1993), Meyer de Schauensee (1966, 1982), Naumburg (1937), Novas & Lima (1998), Oniki (1974), Pinto (1978), Ridgely & Tudor (1994), Sick (1985c, 1993), da Silva *et al.* (1990).

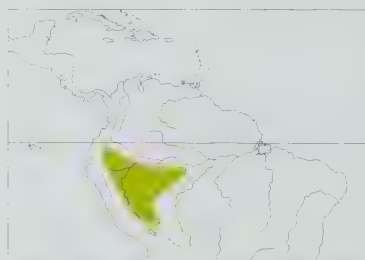
## 5. Ash-throated Gnateater

### *Conopophaga peruviana*

**French:** Conophage du Pérou **German:** Graurücken-Mückenfresser **Spanish:** Jejenero Peruano

**Taxonomy.** *Conopophaga Peruviana* Des Murs, 1856. Pebas, left bank of Río Marañón, Loreto, Peru. Apparently closely allied to the Andean *C. ardesiaca* and *C. castaneiceps* and part of the *C. lineata* lineage, which is also thought to include *C. roberti* and, perhaps, *C. melanogaster*. Monotypic.

**Distribution.** E Ecuador (W & S of R Napo) and Amazonian Peru E to W Brazil (E to E bank of middle and upper R Purús) and S to N Bolivia (La Paz).



**Descriptive notes.** 11-13-12.5 cm; 23-26 g. Male has dark brown crown, white postocular tuft, grey side of head; upperparts mostly brown, wing-coverts with distinct pale buffish tips; throat white, breast grey, lower flanks dull orange-brown, white belly patch; iris dark brown; bill black; legs dark grey to pinkish or horn-coloured. Female has crown more rufous, head side and chest orange-rufous, back orange-rufous with dark lunulate or scaly markings. Juvenile apparently unknown. Voice. Song a string of abrupt, hollow, rather frog-like, weakly disyllabic notes sounding roughly like "hwrickik!", main element of individual

notes rising sharply from c. 1 to 3-5 kHz in just 0-16 seconds, and loudest at top end, delivered at irregular intervals, often c. 5 in 4 seconds, and sometimes continuing for more than 30 seconds; calls include dry chatter and low, harsh, monosyllabic notes. Male in flight occasionally produces fairly loud whirring sound with outer remiges, associated with aggression or courtship.

**Habitat.** Interior of tall *terra firme* forest, often around light gaps, old treefalls and other densely vegetated places, but also fairly frequently encountered in more open understorey. Possibly absent or quite rare in blackwater drainages, especially S of R Amazon; appears to be replaced in such habitat by race *australis* of *C. aurita*. Lowlands, mostly to c. 600 m; possibly to 850 m locally in Peru. Occurs together with *C. castaneiceps* at one site in S Ecuador (Tayuntza, at 600 m).

**Food and Feeding.** Small arthropods. Forages on or near the ground, taking prey from foliage and leaf litter by means of short reaches and gleans.

**Breeding.** Little known. A nest in Ecuador held two nestlings in mid-Aug; a shallow cup surrounded by leaves and twigs, looking like a mass of debris, placed c. 35 cm above ground in small fork of a sapling c. 5 cm in diameter, in *terra firme* forest a short distance above level of seasonal flooding. Another nest in Peru held a nestling and an egg in late Nov; cup-nest 6-8 cm wide, 3-7 cm deep, c. 70 cm above ground in whorl of ferns on *Rinoria* tree, in area of open understorey in rainforest; on approach of observer, female flushed and performed broken-wing distraction display.

**Movements.** Sedentary.

**Status and Conservation.** Not globally threatened. Generally uncommon. Seems to sing less frequently than other conopophagids, making it more difficult to detect. Present in Kapawi Ecological Reserve, in Pastaza, Ecuador, and in Serra do Divisor National Park, in Acre, Brazil. Rare to uncommon in Peru, where occurs in Manu National Park and Biosphere Reserve, in Pacaya-Samiria National Reserve and in Tambopata-Candamo Reserved Zone.

**Bibliography.** Allen (1995), Angehr & Aucea (1997), Begazo & Valqui (1998), Best *et al.* (1997), Cracraft (1985), Donahue (1994), Dreyer (2002), Dunning (1993), Mazar Barnett & Kirwan (1999b), Meyer de Schauensee (1966, 1982), Parker *et al.* (1991), Remsen & Parker (1995), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Sick (1985c, 1993), Terborgh *et al.* (1984), Willson-Hillman & Hogan (2002).

## 6. Slaty Gnateater

### *Conopophaga ardesiaca*

**French:** Conophage ardoisé

**German:** Olivgrauer Mückenfresser

**Spanish:** Jejenero Pizarroso

**Taxonomy.** *Conopophaga ardesiaca* d'Orbigny and Lafresnaye, 1837. Yungas, Bolivia.

Apparently closely allied to *C. peruviana* and *C. castaneiceps* and part of the *C. lineata* lineage, which is also thought to include *C. roberti* and, perhaps, *C. melanogaster*. Range limits of races, and especially whether they meet, are not known. Meets *C. castaneiceps brumeinucha* in SE Cuzco, which probably marks N limit of range. Plumage variation within Bolivian part of range confusing,



with seemingly both dark and light specimens from Cochabamba, and three geographically defined types of back colour in females; of these, the olivaceous form, with two specimens from semi-humid forest of Santa Cruz, may represent another, as yet undescribed taxon. Further research and, probably, taxonomic revision required. Two subspecies currently recognized.

**Subspecies and Distribution.**

*C. a. saturata* Berlepsch & Stolzmann, 1906 - E Andes of S Peru S from SE Cuzco (in Marcapata Valley).

*C. a. ardesiaca* d'Orbigny & Lafresnaye, 1837 - from SE Peru (probably from Puno) S to S Bolivia (Tarija).



**Descriptive notes.** 12.5-14 cm; mean of 57 specimens 26.3 g. Male has dark grey forehead and side of head, white postocular plume; crown and upperparts brown, scaled black; grey of head continuing down over most of underparts, brownish tinge on flanks and belly; some Cochabamba birds darker above and below, with reduced black scaling on back; iris dark brown; upper mandible black, lower mandible yellowish or pinkish; legs greyish. Female has postocular tuft greatly reduced, forehead and area around eye brown to rufous, white belly patch; upperparts variable, from dark brownish (in Cochabamba) to more

olivaceous (Santa Cruz), or distinctly washed rufous (some La Paz birds). Juvenile has pale V-shaped markings paralleling feather edges, imparting spotted appearance above and more scaled look below, with belly centre white. Race *saturata* differs from nominate in slightly browner back, darker face and breast. **Voice.** Song a series of slightly drawn-out, frog-like, weakly disyllabic notes at 2.5-3.5 kHz, sounding like "g-reeep" or "w-reeep", with warbled quality owing to modulation, each note c. 0.25 seconds long, number and spacing of notes variable, but most songs have 3-6 notes and last 2-8 seconds; most common call a piercing "tseet", also a harsher note and dry chatters. In aggression or courtship, male occasionally produces fairly loud burst of whirring sound with outer primaries while in low flight.

**Habitat.** Humid rainforest in foothills; usually found in densest growth available, e.g. around treefalls, old clearings, road edges, and similar openings. Mostly at 800-1800 m; locally to 2450 m in Peru. In S Peru overlaps very slightly with race *brunneinucha* of *C. castaneiceps* in SE Cuzco (on Cuzco-Manu road), where the two taxa co-exist in structurally different habitats.

**Food and Feeding.** Arthropods. Prey captured from foliage and leaf litter on or near the ground, by short reaches and gleans.

**Breeding.** Fledglings observed in Nov in Peru (Puno); of 52 specimens collected in Bolivia in Jun, Jul and Nov, most were in breeding condition; also in Bolivia, three fledglings collected in Nov. No other information available.

**Movements.** Sedentary.

**Status and Conservation.** Not globally threatened. Generally common, but few data. Uncommon in Peru, present in Manu National Park and Biosphere Reserve. In Bolivia, present in Madidi National Park (La Paz and Beni) and in Carrasco National Park (Cochabamba). Possibly benefits from some human activities which lead to opening of the closed forest, e.g. selective logging, road construction, and from landslides and other consequences of such activities.

**Bibliography.** Bond (1953), Cracraft (1985), Dunning (1993), Eidsa & Krabbe (1990), Gemmuse & Sagot (1996), Meyer de Schauensee (1966, 1982), Perry *et al.* (1997), Remsen (1984c), Remsen & Parker (1995), Remsen *et al.* (1986), Ridgely & Tudor (1994).

## 7. Chestnut-crowned Gnateater

### *Conopophaga castaneiceps*

**French:** Conopage à couronne rousse

**Spanish:** Jejenoro Coronicastaño

**German:** Roststirn-Mückenfresser

**Taxonomy.** *Conopophaga castaneiceps* P. L. Selater, 1857, "Bogotá", Colombia.

Apparently closely allied to *C. peruviana* and *C. ardesiaca* and part of the *C. lineata* lineage, which is also thought to include *C. roberti* and, perhaps, *C. melanogaster*. Meets *C. ardesiaca saturata* in SE Cuzco, which probably marks S limit of range. Birds from W slope of C Andes of Colombia may possibly belong to an unnamed taxon, but no details available. Four subspecies currently recognized.

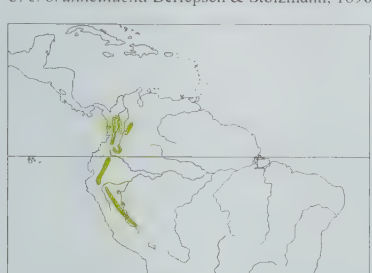
**Subspecies and Distribution.**

*C. c. chocoensis* Chapman, 1915 - W Colombia on W slope of W Andes and in W Chocó (Baudó Mts).

*C. c. castaneiceps* P. L. Selater, 1857 - C & E Andes of Colombia S to C Ecuador.

*C. c. chapmani* Carriker, 1933 - E slope of E Andes from S Ecuador S to N Peru (San Martín).

*C. c. brunneinucha* Berlepsch & Stolzmann, 1896 - E slope in C Peru (from Huánuco S to Cuzco).



**Descriptive notes.** 13-14 cm; mean of seven specimens 27.6 g. Male has top of head orange-rufous, crown and nape tinged browner, prominent white postocular tuft; upperparts brown, wing-coverts tipped orange-buff; face and underparts dark grey, flanks and lower region tinged orange-brown; iris dark brown; bill black with yellowish lower mandible; legs blue-grey. Female has head and chest orange-rufous, postocular plume reduced, whitish throat and belly. Juvenile apparently undescribed. Race *chapmani* differs from nominate in brighter, less brown-tinged crown; *brunneinucha* is darker overall, orange-rufous restricted to forehead, white belly patch; *chocoensis* like *brunneinucha* but smaller, with back more olivaceous, less grey, chestnut of crown more extensive. **Voice.** Song a series of frog-like, slightly disyllabic notes at 3-4 kHz, pace accelerating and amplitude increasing after first 1-2 notes, the whole lasting 3-6 seconds, with longer series returning to more widely spaced and slightly quieter

notes at end, much like song of *C. ardesiaca* but slightly higher frequency; calls include harsh "zhiek!" and lower "schek". In aggression or courtship, male occasionally produces fairly loud whirring sound with outer remiges while in low flight.

**Habitat.** Upper tropical and lower subtropical rainforest. Inhabits interior of tall, mossy forest, but favours openings such as treefalls and regrowing landslides; fairly frequently encountered in open, dimly lit understorey. Mostly at 1000-2000 m, but in Colombia recorded down to 700 m in Valle and 500 m in W Meta, and to 600 m in S Ecuador; recently reported at c. 2200 m in S Peru (Cuzco-Manu road). Occurs together with *C. peruviana* at one site in S Ecuador (Tayuntza, at 600 m). In S Peru overlaps very slightly with *C. ardesiaca* in SE Cuzco (on Cuzco-Manu road), where the two taxa co-exist in structurally different habitats.

**Food and Feeding.** Arthropods. Prey taken from foliage and leaf litter on or near the ground, using short reaches and gleaning.

**Breeding.** In Colombia, nest found in Feb in Valle (upper Anchicayá Valley) and birds in breeding condition in Mar-Jun in C Andes. Nest was a concealed bulky cup 0.8 m up in forest. Territories in N Ecuador may be less than 200 m wide. No other information.

**Movements.** Sedentary.

**Status and Conservation.** Not globally threatened. Fairly common to uncommon and local, easily overlooked. In N Ecuador, density estimated at 1 pair/ha at appropriate elevations on Mt Sumaco (Napo). In Peru, uncommon in Manu National Park and Biosphere Reserve, in Cuzco. Probably benefits from natural or man-made openings in forest, allowing denser growth of vegetation.

**Bibliography.** Best *et al.* (1997), Bloch *et al.* (1991), Donegan & Dávalos (1999), Dunning (1993), Hilts (1975), Hilts & Brown (1986), Hornbuckle (1999), Meyer de Schauensee (1966, 1982), Penard & Penard (1908-1910), Pfeiler *et al.* (2001), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Salaman *et al.* (2002), Stiles *et al.* (1999), Williams & Tobias (1994).

## 8. Black-bellied Gnateater

### *Conopophaga melanogaster*

**French:** Conopage à ventre noir

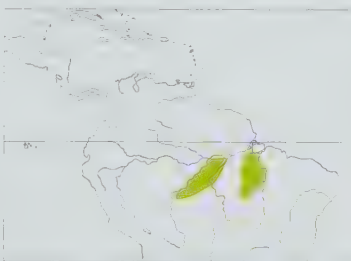
**Spanish:** Jejenoro Ventrinegro

**German:** Westlicher Schwarzkopf-Mückenfresser

**Taxonomy.** *Conopophaga melanogaster* Ménétries, 1835, Cuiabá; error = Rio Madeira, Brazil.

See page 736. In the past was sometimes awarded a separate genus, *Pseudokonopophaga*, on the basis mainly of larger size, but that name now subsumed. Affinities not clear, but on basis of voice and biogeography, probably most closely related to the "*C. lineata* group", comprising also *C. roberti*, *C. peruviana*, *C. ardesiaca* and *C. castaneiceps*. Described form *rusbyi*, based on a single specimen from Bolivia, is not distinguishable, Monotypic.

**Distribution.** Lower Amazonian Brazil S of R Amazon, from E bank of R Madeira E to both banks of lower R Tapajós and S to N Rondônia, and from E bank of R Xingú E to W bank of lower R Tocantins; presence in intervening area not confirmed. Also, single specimen record from NW Bolivia (NW Beni), but locality open to question. Published sight record from W side of R Teles Pires (upper R Tapajós), near Alta Floresta, but unequivocal documentation required in order to confirm presence in this region.



**Descriptive notes.** 14.4-15.8 cm; 37-43.5 g.

The largest gnateater, with distinctive plumage coloration. Male has large white postocular tuft, black head and underparts with dark grey lower belly, red-rufous back, wings and tail; iris dark brown; bill black; legs grey. Distinguished from all other *Conopophaga* species by combination of rufous back and black underparts. Female has greatly reduced postocular plume, rufous crown and nape, rest of black areas of male replaced by grey, whitish throat, obscure whitish belly patch. Juvenile undescribed. **Voice.** Song c. 2.5 seconds long, an evenly paced series of 2-5 short, low (2-2.5

kHz), grating notes not unlike alarm calls of antpittas (*Pittasoma*), each with tightly modulated structure (slight vibrato) and c. 0.17 seconds in duration, notes delivered at intervals of about 0.6 seconds, series often at intervals of more than 1 hour; calls include gruff, barking "chuff" or "cheff", sometimes repeated several times in 1 minute, and rapid, rising "chit-chit-it-it!" sounding like sharp chatter. In aggression or courtship, male occasionally produces loud whirring sound with outer primaries while in low, rapid flight.

**Habitat.** Humid lowland rainforest, often under broken canopy; found only in densest growth, such as brakes of bamboo and other primitive grasses, stands of understorey palms, tangled vines, regrowth in old clearings, and at road edges. Mainly in lowlands; to 700 m on plateau of Serra dos Carajás, in Pará.

**Food and Feeding.** Arthropods. Few direct observations of foraging; seeks prey by hopping along logs and on the ground, usually perching just above ground to scan surrounding foliage and leaf litter.

**Breeding.** Unknown.

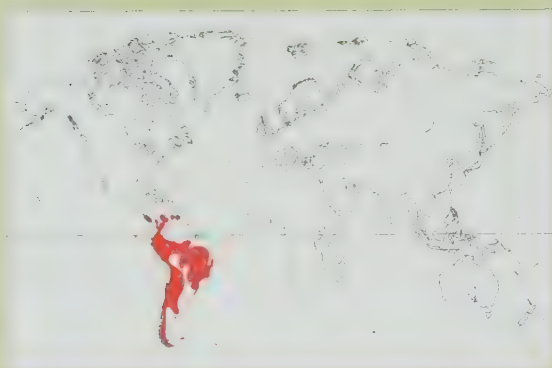
**Movements.** Sedentary.

**Status and Conservation.** Not globally threatened. Fairly common, but particularly difficult to detect if voice is unfamiliar to observer. Few officially protected areas exist within its range. Uncommon in Amazonia National Park, in Pará; fairly common along old logging roads and other thoroughfares in higher sectors of Serra dos Carajás, also in Pará. This species' requirement for very dense growth means that suitable places within the matrix of undisturbed forest may be of small area, and often widely separated from other suitable sites; home range may sometimes be quite limited in extent, perhaps less than 1 ha. Undoubtedly benefits from such practices as selective logging and road construction, so long as a connected source population is present. Status in Bolivia uncertain: single specimen said to have been collected at Reyes, in NW Beni, but this almost certainly not the case, and it seems likely that it was obtained nearby in tall gallery forest along R Beni or, possibly, from somewhere along R Madeira in Brazil. Further efforts to find the species in Bolivia probably best concentrated in humid, broken lowland forest E of R Beni (e.g. the Riberalta area).

**Bibliography.** Dunning (1993), Meyer de Schauensee (1966, 1982), Oren & Parker (1997), Pinto (1978), Remsen & Traylor (1989), Ridgely & Tudor (1994), Sick (1985c, 1993), Zimmer, Parker *et al.* (1997).



Class AVES  
Order PASSERIFORMES  
Suborder FURNARIII  
**Family RHINOCRYPTIDAE (TAPACULOS)**



- Small to medium-sized terrestrial birds with short, broadly rounded wings, large feet, most with short tail; nostril covered by tactile opercula; plumage grey-brown to rufous-brown, grey, blackish and white.
- 9.5-23 cm.



- Neotropical Region.
- Forest, woodland, bushy country, bamboo thickets and semi-arid scrub, a few species among grass tussocks and rocks, one in rushy marshes.
- 12 genera, 55 species, 75 taxa.
- 4 species threatened; none extinct since 1600.

### Systematics

The tapaculos, which constitute the family Rhinocryptidae, belong with the suboscine section of the passerines, which is also variously referred to as the Oligomyodae, the Passeres mesomyodae, the Clamatores, or the Tyranni. The division of the passerine birds into oscines and suboscines is based on the morphology of the syrinx and that of the stapes. In the suboscines, the syrinx contains only two to four pairs of muscles, compared with six to nine, and usually seven, in the oscines. Whereas the stapes have a primitive disc-shaped footplate in the oscines, the footplate in the suboscines has a specialized, bulbous form.

Because of certain morphological similarities between the tapaculos and two primitive oscine families, the lyrebirds (Menuridae) and the scrub-birds (Atrichornithidae) of Australia, the tapaculos have been considered to be the most primitive of the suboscine birds. There is, however, no phylogenetic connection linking the suboscine Rhinocryptidae with the Menuridae and the Atrichornithidae, which are oscines in the corvoid radiation. The observed similarities between the tapaculos and the Menuridae and Atrichornithidae are, therefore, the result of nothing more than primitive characters or convergent features, possibly related to the similar terrestrial lifestyles of these three families.

Together with the ovenbirds (Furnariidae), the woodcreepers (Dendrocolaptidae), the true antbirds (Thamnophilidae), the ground-antbirds (Formicariidae) and the gnateaters (Conopophagidae), the tapaculos form the suborder Furnari, sometimes referred to as the Furnarioidea, or the "Tracheophonae". The monophyly of this group is evident in the fact that all of its members possess a complex tracheal (tracheophone) syrinx with only one pair of intrinsic muscles or none at all, and with no pessulus (see Morphological Aspects). In contrast, the Tyrannoidea, or the "Haplophonae", have a simple, unspecialized, tracheo-bronchial syrinx with only intrinsic muscles.

The closest relatives of the tapaculos have been considered to be the gnateaters and the ground-antbirds. The three groups together form the superfamily Formicarioidea, distinguished by the metasternum being four-notched or showing a tendency towards this condition. This treatment is also supported by research using DNA-DNA hybridization, although further studies with DNA-sequencing data suggest that the sister group of the "true" tapaculos, omitting the primitive *Melanopareia*, is the

two genera of antthrushes (*Chamaeza*, *Formicarius*) of the Formicariidae. Much further work remains to be done in order to resolve the phylogenetic relationships among the genera currently assigned to the Rhinocryptidae, the Formicariidae and the Conopophagidae.

Incidentally, some scientists argue that the correct name for the tapaculo family is Pterotochidae. In order to avoid confusion, however, it is considered better to maintain the name Rhinocryptidae, which has been used by most authors since 1926.

Apart from two or, perhaps, three aberrant genera, the tapaculos constitute a well-knit group the members of which are united by several derived characters. Only the genera *Melanopareia* and *Psilorhamphus* differ to such a degree that their systematic position as tapaculos could be disputed.

The four species of *Melanopareia* differ from all other tapaculos in so many characters that it is possible that they represent another clade. They are brightly coloured and relatively long-tailed, and two of them have a semi-concealed white interscapular patch similar to that found in many antbirds. Most striking is the



Several new species of *Scytalopus* have recently been discovered in the Andes. These new species may have been overlooked in the past largely because most taxa in the genus are extremely similar in plumage and morphology, and the new species tend to have restricted distributions. Molecular-divergence research indicates that these species have been separated for millions of years. The **Diademed Tapaculo** is one of the more distinctive new species, with its shining white forecrown.

[*Scytalopus schulenbergi*, 4 km west of Chusipata, Nor Yungas, La Paz, Bolivia.  
Photo: Omar Rocha]



New species continue to be discovered in the complex of *Scytalopus* tapaculos in the Neotropics.

The so-called "Milpo Tapaculo", seen here, is one of several new species still awaiting formal description by ornithologists.

Near-flightlessness, sedentary and skulking habits, interspecific territoriality and montane distributions made these tapaculos very prone to isolation. Increased knowledge of vocalizations and breakthroughs in DNA research have raised the number of species recognized in this genus from ten in 1970 to some 37 at present, and this number is sure to increase as less well-known forms are studied in greater detail.

[*Scytalopus* sp.  
Andamarca, Junin, Peru.  
Photo: Phil Richardson]



possession by this genus of seemingly primitive stapes of the inner ear. On the other hand, the four *Melanopareia* species have lachrymal bones that are partly fused with the ectethmoid bones, thus according with the typical Rhinocryptidae, whereas lachrymal bones are lacking in the gnatcatchers and the ground-antbirds. Furthermore, the structure of the syrinx and the sternum in *Melanopareia* resembles that of typical Rhinocryptidae. Until the phylogenetic relationships of *Melanopareia* have been clarified by further studies, it would seem better, therefore, to keep the genus in its traditional position within the Rhinocryptidae.

The monotypic *Psilorhamphus* has a booted, or acutiplantar, tarsus, which led some earlier taxonomists to place it with the polioptiline oscines, the gnatwrens, and others to include it with the wrens (Troglodytidae), in both cases overlooking the typical suboscine absence of an aftershaft on the feathers of *Psilorhamphus*. Similarly, other taxonomists placed it with the true antbirds, of which some, including *Pyriglena* and some individuals of *Drymophila* and *Myrmorchilus*, also have fused acrotarsal scutes. Yet others suspected *Psilorhamphus* to be a tapaculo, but, as only skins were available for study, a firm determination could not be made. It was not until 1958, when the results of the first dissection of an anatomical specimen of this rare bird were published, and it became known that the skeleton and syrinx of *Psilorhamphus* so closely resemble those of *Scytalopus* tapaculos, that the enigma of its affinities appeared to be solved. As also demonstrated by many other cases in avian systematics, tarsal scutellation is of poor taxonomic value at higher levels.

Within the Rhinocryptidae, the relationships of most genera remain obscure. *Melanopareia* is particularly isolated. Indeed, an analysis of both nuclear and mitochondrial DNA suggested that not only is *Melanopareia* not close to the other three genera that were studied (*Scytalopus*, *Pteropochus*, *Rhinocrypta*), but in fact it appears to be a basal taxon that may be the sister to all of the rest of the tracheophone suboscines. Unfortunately, no genetic studies to date have included *Psilorhamphus*. *Teledromas* approaches *Melanopareia* in its fairly straight and ossified humerus, in its pterylosis, and also in details of the nostrils and the tarsal scutellation, but its biochemistry reveals that it belongs with the typical tapaculos. The genera with large species that are confined to the south Andean region, namely *Pteroptochos* and *Scelorchilus*, are closer to each other than either is to *Scytalopus*,

and they are probably monophyletic. The closest relatives of the monotypic genera *Psilorhamphus*, *Liosceles* and *Acropternis* are unknown, although the first of those appears to be closer to *Scytalopus* than to *Rhinocrypta*. The genera *Merulaxis*, *Myornis*, *Scytalopus* and *Eugralla* may possibly form a branch. The monotypic *Myornis* has been included in *Scytalopus* by some authors, but it was recently pointed out that it is remarkably similar in general shape and juvenile plumage, as well as in its peculiar song, to the south-east Brazilian genus *Merulaxis*, which could be its closest relative. The single species of *Eugralla*, inhabiting south-central Chile, resembles a *Scytalopus* in plumage and size, but it differs in its nest, its behaviour, its narrower and less loose-webbed rectrices, and the more elevated base of its bill.

Species limits within the genus *Scytalopus* present an exceptional challenge, which is discussed in detail below. In other genera they are also sometimes difficult to establish. Two species of *Pteroptochos* inhabiting central and southern Chile, namely the Chestnut-throated Huet-huet (*Pteroptochos castaneus*) and the Black-throated Huet-huet (*Pteroptochos tarnii*), were long considered to be conspecific. Recently, however, their fairly similar vocalizations were reported to show constant differences. They have not been found in actual sympatry, but the Black-throated Huet-huet was collected just north of the Bío Bío River, long believed to form a major barrier between the two species. It seems likely, therefore, that they have been in contact with one another several times during the latitudinal displacements of the Valdivian forest caused by the climatic fluctuations of the Pleistocene. Furthermore, mitochondrial DNA comparison of the two taxa shows a surprising difference of 6.1%, equivalent to about 3 million years of isolation.

The two *Merulaxis* bristlefronts differ only slightly from each other and have allopatric distributions. Although they could perhaps be conspecific, they are maintained as separate species on the basis of differences in the proportions of the bill and feet, in general size, and possibly in female coloration. Unfortunately, it appears unlikely that the matter of their taxonomic status will ever be resolved, as Stresemann's Bristlefront (*Merulaxis stresemanni*) is nearly extinct (see Status and Conservation).

The four species in the genus *Melanopareia* have entirely discrete distributions and comprise two groups. The Marañón Crescentchest (*Melanopareia maranonica*) and the Elegant





Crescentchest (*Melanopareia elegans*) inhabit adjacent ranges in north-west Peru and south-west Ecuador. They have fairly similar vocalizations, and the former has occasionally been ranked as a subspecies of the latter. Most authors, however, treat the Marañon Crescentchest as a distinct species on morphological grounds, involving mainly its longer tail, its different wing coloration and pattern, and the fact that the crown is black in both sexes, the crown being a sooty-olive colour in females of the closest populations of the Elegant Crescentchest. The second group, comprising the Collared Crescentchest (*Melanopareia torquata*) and the Olive-crowned Crescentchest (*Melanopareia maximiliani*), has a more southerly distribution. Both species have a white interscapular patch, but in general coloration they differ more from each other than do the two northern species, and they also differ from each other in bill shape and in voice. The two Andean subspecies of the Olive-crowned Crescentchest are vocally indistinguishable, but the Chaco form, *pallida*, delivers a decidedly faster song of a somewhat different quality, suggesting that it may deserve the rank of a full species.

The systematics of the genus *Scytalopus* are among the most problematic within the entire avian class. A multitude of confusingly similar species exists. The majority of forms are confined to the Andes, where up to five species can occur along an altitudinal gradient, most showing pronounced interspecific territoriality and extremely sharp altitudinal segregation where their ranges meet. Many species are so alike, simply lacking any distinguishing characters, that numerous individual specimens in collections cannot be safely ascribed to one taxon or another on the basis of morphology. This applies even to forms which, according to molecular-divergence data, appear to have been separated for millions of years.

Until well into the 1990s, a dozen or so of the currently recognized species of *Scytalopus* were almost universally united by taxonomists into a single species, referred to as the "Andean Tapaculo", taking the scientific name *Scytalopus magellanicus*. This supposed species had a distribution extending the length of South America, from west Venezuela and Colombia all the way down to Tierra del Fuego.

Recent fieldwork has shown, however, that many populations of these tapaculos that appear "identical" to others in the hand can be distinguished readily by voice, and by elevational distri-

bution. Application of these field results has produced new classifications that employ vocal differences as a means of distinguishing species, leading to the recognition of a great many more species than would otherwise be the case. It is sometimes easier, however, to recognize different species by voice than it is to be certain of what name to use to identify each of these species. The potential for confusion stems from the difficulties that are at times encountered in connecting a particular vocal type, recognized in the field, to the relevant type specimen. These difficulties arise in part from the general similarity of almost all species of *Scytalopus*, coupled with additional complications such as type specimens which are in juvenile plumage, older specimens with plumage that has undergone post-mortem colour changes, commonly referred to as "foxing", and which thus cannot be compared directly with new material, and even type specimens which are incomplete and are lacking, for example, a tail. While an understanding of the true classification of *Scytalopus* has improved considerably, it is nonetheless fair to say that this remains a work in progress. There may be some justifiable confidence with regard to the classification and nomenclature of tapaculos living in certain regions, such as Ecuador, where a great deal of recent fieldwork has been carried out, and for which most of the relevant type specimens have been re-examined. On the other hand, it is important to emphasize that much work remains to be done, especially in those regions which have, to date, received less attention in terms of fieldwork, a key example of such being the Andes of Colombia.

This modern approach to *Scytalopus* systematics, based on the vocal recognition of species, has been supported further by biochemical data for 14 species. These data, the results of comparison of sequences of mitochondrial DNA, have also indicated that many previously described species appeared to be decidedly polyphyletic, and that sibling forms with parapatric distributions along an altitudinal gradient are generally not each other's closest relatives. An exception to this last finding concerns two species occurring from south-east Peru to Bolivia, the Diademed (*Scytalopus schulenbergi*) and Puna Tapaculos (*Scytalopus simonsi*), which appear to be more closely related to each other than they are to any others of the genus. The near-flightlessness, sedentary and skulking habits, interspecific territoriality, and predominantly montane distribution of the *Scytalopus* tapaculos make

The name "tapaculo" is thought to derive from a way of saying "cover your rump, or rear end" in Spanish, and may refer to the habitually cocked tail of many tapaculos. Generally tapaculos show rather straight, slender bills and they possess tactile lids which cover the nostrils and which give rise to the family name of Rhinocryptidae ("covered nose"). Sternum morphology reveals the close affinity of this family with the ground-antbirds (Formicariidae) and gnateaters (Conopophagidae). The **Moustached Turca** and other members of the genus *Pteroptochos* are characterized by their large size, long legs and strong feet and claws.

[*Pteroptochos megapodius megapodius*, 20 km north of La Serena, IV Region, Chile. Photo: Gonzalo González/ Science Adventure]





The genus *Scelorchilus* consists of two species which are mainly confined to Chile. The boldly marked and striking **Chucao Tapaculo** is found in the southern Nothofagus beech forests. It is essentially terrestrial and even sings from the ground as it walks around. In shape it resembles a *Chamaeza anthrush*, and it is interesting to note that DNA sequencing work suggests that these anthruses may be a sister group to the "true" tapaculos.

[*Scelorchilus rubecula rubecula*, southern Chile.  
Photo: Günter Ziesler]

them exceptionally prone to isolation. Frequent inbreeding, a result of their poor dispersal abilities, probably causes the high incidence of partial albinism recorded in the genus.

Thirty-seven species of *Scytalopus* are currently recognized, compared with only ten in 1970, but the systematic position of several forms still requires clarification. Nearly all taxa considered to be subspecies by earlier taxonomists have now been raised to full species rank, but those forms the voices of which are as yet unknown are for the time being retained at their traditional taxonomic level. Some of these may prove to merit a higher rank than they are presently given, and others a lower rank. Invaluable as the use of vocal characters has been in delineating taxa in the field, some difficulties remain in matching populations that are recognizable in the field to original type specimens, a particularly problematic exercise in a genus exhibiting so little plumage variation. The task is further complicated in that the names of some taxa are, as already mentioned, based on juvenile specimens, which may not be reliably identifiable.

With regard to the Paramo Tapaculo (*Scytalopus canus*), the vocally unknown population from the north end of the western Andes of Colombia is separated by the Cauca Valley from the taxon *opacus* of Ecuador and the central Andes of Colombia, which is currently treated as a subspecies of it. If the two forms are, indeed, each other's closest relatives, they have probably been separated for long enough for speciation to have occurred.

Similarly, the taxon *intermedius* is vocally unknown and may not even be closely related to the Blackish Tapaculo (*Scytalopus latrans*), of which it is currently considered a subspecies. Moreover, birds which are at present included within the nominate subspecies of that species comprise at least three groups, one eastern, one western and one or more northern, which differ somewhat in their vocalizations.

Tapaculos having a white crown patch and currently included with the White-crowned Tapaculo (*Scytalopus atratus*) are also in need of a thorough revision. This species is presently treated as comprising three subspecies. Peruvian individuals, although they have not been separated even subspecifically from Ecuadorian birds, sound distinctly different from them. The Ecuadorian population is referred to the nominate subspecies, but the type of that taxon comes from far to the north, in the eastern Andes of Colombia, whence no recordings are available. Another taxon

with a white crown spot, *nigricans*, is confined to the Perijá Mountains of west Venezuela, a region rich in endemic bird taxa. Although it is treated as a subspecies of the White-crowned Tapaculo, it is vocally distinct from both Ecuadorian and Peruvian birds, sounding most like the latter. The third and final subspecies, *confusus*, is vocally unknown. The type locality of *confusus* is in the Cauca Valley, but birds from the western side of the Magdalena Valley have also been included in this taxon.

Equally unknown are the voices of *psychopompus* and *santabarbarae*. These two taxa are evidently closely related to the White-breasted Tapaculo (*Scytalopus indigoticus*) and the White-browed Tapaculo (*Scytalopus superciliaris*), respectively, and perhaps do not merit recognition as valid taxa at all. Nevertheless, since the first was described as a species, the Bahia Tapaculo (*Scytalopus psychopompus*), and *santabarbarae* was described as a subspecies of the White-browed Tapaculo, it is deemed better to maintain them as such until their vocalizations become known.

DNA comparisons have been performed on only a limited number of taxa of the genus *Scytalopus*. Among the results are that *argentifrons* of Costa Rica and *chocoensis* from Pacific Colombia and Ecuador are close relatives, suggesting that the intervening form *panamensis* also belongs in the same clade. It was also found that *spillmanni* and *parkeri* are close relatives, and another well-resolved clade is formed by *schulenbergi*, a new species soon to be described from Apurímac, in the central Peruvian Andes, and *simonsi*.

In addition to the ongoing revisions of the proper taxonomic ranking of previously described taxa, new species continue to be discovered. Indeed, no fewer than five new species of *Scytalopus* have been named within the past ten years: these are the Diademed Tapaculo, the Choco Tapaculo (*Scytalopus chocoensis*), the Ecuadorian Tapaculo (*Scytalopus robbinsi*), the Chusquea Tapaculo (*Scytalopus parkeri*) and the Marsh Tapaculo (*Scytalopus iraiensis*). Moreover, there are at least a further two, both from south-central Peru, awaiting formal description: one of these occurs at 3450-3650 m in Pasco, and the other at 3000-4000 m in Apurímac, and both appear to be related to the Neblina Tapaculo (*Scytalopus altirostris*), which lives farther north in the Peruvian Andes. The voices of four or five forms are known while an insufficient number of specimens of them, or none at all, have been





collected for study. It is possible, therefore, that more taxa may yet be discovered. Evidently, the taxonomy of this genus is far from resolved.

### Morphological Aspects

Tapaculos generally have a rather straight, weak and slender bill, but in some species the base of the bill is elevated to add some strength. The tactile but usually bulging lids that cover the nostrils of all the tapaculos have given rise to the name *Rhinocryptidae*, meaning literally "covered nose". The only other passerines that possess such lids are the two Australian families *Atrichornithidae* and *Menuridae*.

The *Rhinocryptidae* have a well-developed four-notched sternum, known as the "type 6 sternum". This condition, or a tendency towards it in which the medial pair of notches is replaced by pairs of windows, the "type 5 sternum", is found in some ground-antbirds and in the gnateaters, but in no other bird fam-

ily. Occasionally, as seen in one of two specimens of the Black-throated Huet-huet, windows may be present on one side and a notch on the other, suggesting a close evolutionary relationship between these conditions. As with other birds having poor flying ability, tapaculos lack a median keel on the sternum.

With the exception of *Melanopareia*, the members of this family have a distinctive stapes of the inner ear. Another character uniting them is the possession of lachrymal bones fused with the ectethmoid. Lachrymal bones are lacking in the typical antbirds, ground-antbirds and gnateaters. An incomplete skull pneumatization, or ossification, is more pronounced in the tapaculos than in other members of the *Furnarii*, being most extreme in the genus *Scytalopus*, where the braincase never ossifies at all. Only the monotypic genus *Rhinocrypta* appears to show advanced skull ossification in adults.

The tapaculo humerus also tends to be non-pneumatic, except in the case of the genera *Melanopareia*, *Teledromas* and *Liosceles*, and has a strong curvature, although the latter feature is lacking in *Melanopareia* and, to a certain degree, in *Teledromas*.



Morphological characteristics that unite members of the tapaculo family include a distinctive stapes, except in the genus *Melanopareia*; the possession of lachrymal bones fused into the ectethmoid; and incomplete skull ossification. Only the **Crested Gallito** appears to show advanced skull ossification in adults. This large tapaculo is found in dense scrub in south-central South America, from south-east Bolivia to central Argentina. Its striking crest makes it amongst the most distinctive of tapaculo species.

[*Rhinocrypta lanceolata lanceolata*, Lihué Calel National Park, Argentina. Photo: Günter Ziesler]

The **Sandy Gallito** is a shy inhabitant of arid scrub on sand and gravel in western Argentina. It is almost exclusively terrestrial and is able to run extremely fast. It shows certain structural affinities to the *Melanopareia* crescentchesters, but biochemical studies indicate that it is close to the typical tapaculos. In general appearance it is not really very similar at all to any other Neotropical passerine but is instead quite strongly reminiscent of the Australian *Amytornis* grasswrens.

[*Teledromas fuscus*, La Pampa, Argentina. Photo: José & Adriana Calo]



As in the case of other suboscine passerines, tapaculos' feathers do not have an aftershaft. Most genera also have a unique form of pterylosis of the ventral tract in which the flank margin is undivided from the main element. Plumage is generally dull-coloured and feathers are of a loose texture, particularly those of the tail. Although tapaculos commonly hold their tails cocked, some species such as the **Rusty-belted Tapaculo** rarely do so. This species is the only tapaculo to occur in the humid forests of Amazonia.

[*Liosceles thoracicus erithacus*, 5 km south-west of Taisha, Morona-Santiago, Ecuador. Photo: Doug Wechsler/VIREO]



This characteristic is unique to the family, although approached by gnateaters and some ground-antbirds.

Two subfossilized bones, one a tibiotarsus from Cuba and the other a humerus from the nearby Isle of Pines, are exceedingly similar to those of *Scytalopus*, and indeed were identified as such by S. L. Olson and E. N. Kurochkin. The chance of a *Scytalopus* tapaculo managing to raft across the sea, and then successfully colonize Cuba as the sole representative of the entire suborder Furnarii, seemed unlikely, but the strong similarity in shape between the bones from Cuba and the same skeletal elements in *Scytalopus* was not in dispute. Recently, however, this paradox was resolved. W. Suarez and Olson had the opportunity to compare the anomalous bones with a skeleton of the Zapata Wren (*Ferminia cerverai*), a rare endemic of Cuba, and a member of the oscine family Troglodytidae. Suarez and Olson realized that the *Ferminia* skeleton was a better fit even than *Scytalopus*, thus supplying a far more likely source of the hitherto enigmatic bones.

The tapaculo syrinx exhibits three extrinsic pairs of muscles and one, dorsally originating intrinsic pair of muscles, the latter lacking in *Teledromas*. This is in contrast to the Furnariidae, which possess two pairs of intrinsic muscles, and the Formicariidae and Conopophagidae, which lack the intrinsic muscles. As with other mesomyodian birds, the intrinsic muscles are inserted on the middle of the bronchial semi-rings, C-shaped cartilages that strengthen the bronchi. The pesselus, a bony bar lying at the junction of the bronchi, is absent in the Rhinocryptidae, as it is in other members of the Furnarioidea. The processus vocalis is well developed, unlike in the true antbirds, and the sternotracheal extrinsic muscle is simple, whereas it is bifurcate in true antbirds.

In common with many other terrestrial birds, most tapaculos have notably strong feet and rather large claws. The Ocellated Tapaculo (*Acropternis orthonyx*) possesses a grotesquely long and straight hind claw, the function of which has been disputed (see General Habits). The scaling of the tarsus tends to be taxaspidean as in the true antbirds, not holaspidean as in the most ground-antbirds or exaspidean as in the gnateaters (see page 689). As already indicated (see Systematics), however, tarsal scutellation is now rarely accorded much importance in higher-level systematics.

Tapaculo feathers, like those of other suboscine birds, lack an aftershaft. With the exception of the genera *Melanopareia* and *Teledromas*, the Rhinocryptidae have a unique pterylosis of the ventral tract in which the flank margin is undivided from the main element. The rump is densely covered with feathers, which, at least in some species, are spread during display. The plumage is generally dull-coloured, although the four *Melanopareia* species are much brighter, and the feathers, particularly the rectrices, are of loose texture. The feathers readily fall out, this presumably being an adaptation designed to confuse predators, as occurs with pigeons (Columbidae), nightjars (Caprimulgidae), trogons (Trogonidae) and thrushes (Turdidae). Several rhinocryptid genera have stiff and erect loral feathers, probably as a protection for the eyes while the bird tunnels under ground or picks insects from dense vegetation, roots and earthen banks. The two bristlefronts have these feathers elongated, allowing them to see while boring with the head into leaf litter (see Food and Feeding).

All tapaculos have ten primaries, as do other suboscines. Their wings are short and very rounded, rendering them incapable of sustained flight. The tail is graduated, in many species strongly so, and is usually carried in a wren-like fashion, half-cocked or straight up, or even held forwards almost to touch the head.

The number of tail feathers, believed to be primitively twelve, shows a remarkable variability within the family, or even within a single species. All three species of *Pteroptochos* usually have 14 rectrices, while the White-throated Tapaculo (*Scelorchilus albicollis*), the Crested Gallito (*Rhinocrypta lanceolata*), the Ocellated Tapaculo and both *Merulaxis* species have twelve. The four *Melanopareia* crescentcheests have ten or eight tail feathers, and the Spotted Bamboowren (*Psilorhamphus guttatus*) apparently always has eight. In the genus *Scytalopus*, Spillmann's Tapaculo (*Scytalopus spillmanni*) usually has twelve rectrices, but occasionally 13 or 14, whereas the Mouse-coloured Tapaculo (*Scytalopus speluncae*) and the Brasilia Tapaculo (*Scytalopus novacapitalis*) almost equally frequently have twelve or ten, while the Blackish Tapaculo usually possesses ten tail feathers, but sometimes has eight, eleven or twelve. Asymmetry of the rectrices is occasionally evident. This is caused sometimes by the regular





addition of a feather on one side, and sometimes by the presence of a twin follicle where the new feather grows without the old one falling out.

Most female tapaculos resemble the respective males, differing only in being slightly smaller and, in some species, in having a somewhat duller coloration. An exception is the genus *Merulaxis*, which exhibits striking sexual dimorphism. In most species of *Scytalopus*, the females are on average more heavily washed with brown than the males, but often a few females are as grey as males. It appears that *Scytalopus* females simply require more moults in order to attain full adult plumage, although the females of some species are always browner than the males.



The plumages and moults of *Scytalopus* are so irregular that it is rare to find two individuals that look alike. The barred juvenile plumage is extremely variable, even within one and the same population. Successive moults usually result in one or two "immature" or "subadult" plumages, but occasionally an individual may change directly into a nearly adult plumage. A moult can result in some feathers having an immature pattern on one side of the body and an adult pattern on the other side.

### Habitat

Tapaculos forage on the ground and low down in dense undergrowth. Most are found in humid forest, but some species prefer other habitats. Members of the genera *Melanopareia* frequent arid scrub, as also do the Sandy Gallito (*Teledromas fuscus*) and the Crested Gallito, while the two *Scelorchilus* species and the Moustached Turca (*Pterotochos megapodius*) are found in semi-humid and semi-arid shrubbery.

The majority of the species of *Scytalopus* are dwellers of forest understorey, but some are found among tussocks of grass and rocky boulders, and others in semi-humid bushy patches and *Polylepis* woodland at the treeline. The Marsh Tapaculo, as its name implies, inhabits rushy marshes, while the Large-footed Tapaculo (*Scytalopus macropus*) is often restricted to streamside vegetation in elfin forest in the central Peruvian Andes.

Several tapaculos prefer bamboo thickets. These include the Ash-coloured Tapaculo (*Myornis senilis*), the Ocellated Tapaculo, the Chucao Tapaculo (*Scelorchilus rubecula*) and some species of *Scytalopus*. The appropriately named Spotted Bamboowren of south-east Brazil is confined to large stands of bamboo at the edge of dense secondary forest.

### General Habits

Although frequently heard, tapaculos are exceptionally difficult to see, except when attracted by playback of their vocalizations. As a consequence, their habits are poorly known.

Observations are usually brief. Typical examples are the sighting of a large *Pterotochos* singing from the top of a distant rock

Most tapaculos, such as this **Ocellated Tapaculo**, have strong feet and large claws reflecting their largely terrestrial lifestyle. In addition, this species has an exceptionally long, straight and sharp hindclaw. The function of this unusual feature is unknown and the subject of much conjecture. One of the most likely proposals is that the hindclaw is an adaptation to aid the species when it forages by "jump-scratching", where earth and leaves are disturbed by awkward jumps in order to uncover food items.

[*Acropternis orthonyx infuscatus*, Sierra Sabanilla (2500 m), Zamora-Chinchipe, Ecuador.  
Photo: Doug Wechsler/VIREO]

From the point of view of human observers, tapaculos of the genus *Scytalopus* are amongst the most frustrating birds in the Neotropics. They inhabit the dense forest understorey and spend much of the time skulking, only rarely coming out into the open. In addition, there is considerable repetition of plumage patterns, such as that shown by this **Mouse-coloured Tapaculo**, and such notable similarities often preclude identification on the basis of sight alone. Fortunately, vocalizations differ considerably throughout the genus, frequently making this a key factor for identification.

[*Scytalopus speluncae*, Carlos Botelho State Park, São Paulo, Brazil.  
Photo: Edson Endrigo]



Some tapaculos have stiff, erect loral feathers. These are probably an adaptation to protect the eyes while the birds tunnel underground to make nest chambers, or when feeding amongst dense vegetation, roots and earth banks. In the **Slaty Bristlefront** these loral feathers are extremely elongated presumably allowing the bird to see clearly as it forages by thrusting its head into deep leaf litter on the forest floor. This species inhabits the montane forests of south-east Brazil, where its unobtrusive nature makes it difficult to observe.

[*Merulaxis ater*,  
Ubatuba,  
São Paulo, Brazil.  
Photo: Edson Endrigo]



in the forest as the fog lifts momentarily, or a glimpse of a *Scytalopus* as it passes quickly through the dense undergrowth or tunnels like a mouse among roots in an earthen bank. Groups of human observers have little chance of seeing a tapaculo under natural conditions. The best opportunities are perhaps provided in the relatively open undergrowth of the Amazon forest, where a Rusty-belted Tapaculo (*Liosceles thoracicus*) may be seen to walk along a decaying fallen trunk. Even then, however, the bird almost always walks on the side facing away from observers, so

that it requires watchers to be stationed on both flanks if any of them are to catch sight of the tapaculo.

Tapaculos are very reluctant to cross open spaces or to fly. When escaping while being handled, they will almost invariably do so by running while trying to keep constantly under cover. If, after being released, they are unable to return to their habitat under cover, they will often crouch under a boot or along the edge of a tent, or crawl into a small hole, the result being that they can sometimes be recaptured by hand. It is worth noting, incident-

The genus *Melanopareia* consists of four species that show a number of characteristics that differ from the more typical members of the family. They are more colourful and strikingly marked, with a relatively long tail. In addition, two species, including the **Collared Crescentchest**, have semi-concealed white dorsal patches. The most significant morphological difference in this genus, however, is the possession of a seemingly primitive stapes in the inner ear. Despite these differences there remain a number of shared features that justify the current placement of this genus in Rhinocryptidae, but further study is required.



[*Melanopareia torquata*,  
torquata,  
Das Emas National Park,  
Goiás, Brazil.  
Photo: Arthur Grosset]



tally, that *Scytalopus* species are particularly adept at escaping from the hand, probably more so than any other bird.

The *Scytalopus* species are generally restless and rather fast-moving birds, but from time to time they may remain motionless in one spot for many minutes. Other rhinocryptids are slower, a notable example being the Rusty-belted Tapaculo: after playback or an imitation of this species' song, several minutes can pass before the individual bird itself walks up close to the observer. The Ocellated Tapaculo is often nothing short of lethargic, taking only a few laboured hops at a time as it moves slowly through the undergrowth.

Tapaculos are often found in pairs, the members of which keep in vocal contact with one another. In one observation, a pair of Ochre-flanked Tapaculos (*Eugralla paradoxa*) could be heard to follow the same route every day with clock-like regularity. Members of an Ocellated Tapaculo pair usually forage only a few metres apart, and call frantically whenever they lose sight of each other. It seems quite possible that pair-bonds could be permanent, but this remains undocumented.

The tapaculos are strongly territorial, being easily attracted to playback of their song. Playback of male song will elicit attack by a male, often with the female watching, whereas playback of a female vocalization will elicit attack by a female and sometimes also song from nearby males.

Some authors have speculated that the long, straight hind claw of the Ocellated Tapaculo is used as a weapon during territorial disputes, but there is no evidence that such fighting ever takes place. Indeed, several territorial disputes involving this species were observed to be settled by vocalization. It seems more probable that the claw has another function. It could be employed in the manner of a "snowshoe" while the bird walks on thick layers of moss or spike-moss (*Selaginella*), or, perhaps most likely, as an aid in foraging (see Food and Feeding). Direct fighting between territorial males has been observed for only a few species of tapaculo, but may occur more widely among the members of this family.

Head-scratching has been observed in *Melanopareia* and was by the indirect method, with the leg brought over the wing, but few other aspects of comfort behaviour have been documented for the family. The Rusty-belted Tapaculo has been observed to bathe in rainwater puddles, as well as to drink from them, and it is possible that similar behaviour occurs among at least some other tapaculos.

Little is known of the roosting behaviour of the Rhinocryptidae. One Spillmann's Tapaculo was found asleep at night as it crouched alongside a horizontal bamboo stalk, near an internode. It seems likely, however, that many tapaculos, especially in colder regions, sleep in cracks or underground, places in which they hide when pursued during the daytime.

## Voice

One of the chief characteristics of tapaculos is their loud and penetrating song, easily heard through the dense and wet vegetation inhabited by most of the family's 55 species. As appears to be the case for all suboscines, the simple calls and songs are entirely innate, showing little or no variation over geographical distance.

Some tapaculo songs are short phrases at even, falling or rising pitch and amplitude, with the notes delivered at a constant, accelerating or decelerating pace. Others consist of even repetitions of the same note, the pace varying among species, from one to 30 notes per second, and the entire sequence lasting for up to one minute. Some species utter rapid churrs composed of alternating, connected, falling and rising notes.

A few genera, such as the Argentine *Rhinocrypta* and the Chilean *Scelorchilus*, have loud, low-pitched, resonant songs which travel along the ground. Most "exotic" are the loud, hollow notes of the Chilean *Pteroptochos* tapaculos and the rare and little-known Spotted Bamboowren from south-eastern Brazil, which sound more like the vocalizations of *Grallaria antpittas* or *Myrmothera* or *Chamaeza* antthrushes than like those of other tapaculos. The song of the bamboowren is said to be unbelievably loud for such a small bird.

In several rhinocryptid species, the two sexes sing in duet, the female's voice being usually higher-pitched. In the cases of the Rusty-belted Tapaculo, the Collared Crescentchest, the Ochre-flanked Tapaculo and the Blackish Tapaculo, the female sounds much like the male, but females of many *Scytalopus* species give squeaky, descending series, very different from the trills or repeated notes emitted by males. Both sexes of most or, perhaps, all tapaculos have similar alarm notes, although those of the females are usually slightly higher in pitch.

Members of the genus *Scytalopus* are so alike in plumage that, for the human observer, at least, voice is most likely to play



Juvenile plumage in tapaculos is notable in often differing greatly from that of the adults, as illustrated by this juvenile **Black-throated Huet-tapaculo**. The barred juvenile plumage of the genus *Scytalopus*, such as this **Magellanic Tapaculo**, is so variable that it is rare to find two individuals that look alike! Successive moults usually take birds through one or more subadult plumages. Curiously, female *Scytalopus* tapaculos may require more moults to attain full adult plumage than do males.

[Left: *Pteroptochos tarnii*, Santa Cruz, Argentina. Photo: José & Adriana Calo.

Right: *Scytalopus magellanicus*, Garibaldi Pass, Tierra del Fuego, Argentina. Photo: A. Greensmith/Ardea]



The **Puna Tapaculo** is one of a number of *Scytalopus* forms recently raised to species status as a result of analysis of vocalizations and DNA research. This species is confined to the high Andes of southern Peru and Bolivia. It inhabits puna, the relatively dry high-altitude grassland found above the tree-line in this region, and in this rather bleak habitat it searches for food amongst the exposed rocks and occasional patches of shrubs that can be found in less exposed areas.

[*Scytalopus simonsi*,  
at 3800 m,  
Carrasco National Park,  
Cochabamba, Bolivia.  
Photo: Michael Kessler]



Tapaculos occupy nearly every available habitat in the Neotropics from the open, arid scrub of the southern centre, to the humid forest of Amazonia, and the highest montane grasslands of the Andes. All three members of the genus *Pteroptochos* occur in Chile, with one species found in matorral and on semi-open slopes with scattered rocks and boulders, while the other two, including the **Black-throated Huet-huet**, inhabit humid southern beech (*Nothofagus*) forests and other humid forest types.

[*Pteroptochos tarnii*,  
Chiloé National Park,  
Chile.  
Photo: Andrés Morya  
Hinojosa]

the major role in species recognition. For those species which have been investigated, a correlation was found between vocal and genetic differences, which paved the way for a new classification of the genus based primarily on voice (see Systematics). The general pool from which the different species of *Scytalopus* draw their vocalizations is not, however, great, the result being that unrelated species can have fairly similar songs. The Diademed Tapaculo, for example, bears a rather close resemblance both vocally and morphologically to the Central American Silvery-fronted Tapaculo (*Scytalopus argentifrons*), but genetically it appears to be closest to the two geographically adjacent forms, namely the Puna Tapaculo and an as yet undescribed species (see Systematics). This suggests that selection for species recognition may lead to a marked displacement of song type.

With the exception of the frog-like calls of the Blackish and White-breasted Tapaculos, the quality of a *Scytalopus* vocalization is distinctive, bearing a resemblance only to those of the furnariid genera *Thripadectes*, *Sclerurus* and *Lochmias*, and the dendrocolaptid *Dendrocincla*. An alarm call, a rising and falling "keeekeeekeeekeee" of three to seven notes, is shared by many species of *Scytalopus*, though usually differing in pitch, but all of these tapaculos differ in their songs.

Some *Scytalopus* species appear to have a larger repertoire than do others, and the functions of the various vocalizations are not always clear. Spillmann's Tapaculo, for example, has a trilled song that is uttered once or a few times at dawn by each male in an area, presumably with a territorial function, but the same song is given in response to the female's advertising call. In territorial disputes males repeat a rising churr, but the same churr may also be given during courtship. The female's advertising call, usually answered immediately by several singing males, is a descending series of very high-pitched notes, the first being a very explosive "brzk". A similar "brzk" has been recorded from females of many *Scytalopus* species, but in the case of the Caracas Tapaculo (*Scytalopus caracae*) the males utter this call frequently. This tapaculo, incidentally, also differs from other species of *Scytalopus* in its song, which resembles the alarm call of many species. The Chusquea Tapaculo is closely related to Spillmann's Tapaculo, but males of the former deliver the sustained trill only during duets; this species' usual dawn song resembles a descending series given during territorial disputes. Descending, high-pitched

advertising songs by females have been recorded for the southern subspecies *opacus* of the Paramo Tapaculo, the Chusquea and Spillmann's Tapaculos, the Narino Tapaculo (*Scytalopus vicinior*) and the Ecuadorian Tapaculo, but it is possible that they are given also by many other species.

A characteristic of many tapaculo vocalizations is the presence of harmonics. Usually either the fundamental or the first overtone is loudest, but sometimes two harmonics are equally loud. In the complex "brzk" note given by females of many species, up to five, almost equally loud harmonics are audible.







A major characteristic of the tapaculos is the loud song, which typically carries clearly through the dense, often moist, vegetation found in the habitats of many of the species. Songs fall into three main categories: short repeated phrases at even, falling or rising pitch and amplitude; rapid churring; and short, even repetitions of the same note at different speeds. The song of the **Sandy Gallito** is of the last type, consisting of a series of 3-10 loud "tchowk" notes repeated every 4-5 seconds.

[*Teledromas fuscus*, La Pampa, Argentina. Photos: José & Adriana Calo]

### Food and Feeding

Tapaculos feed on a variety of arthropods. These consist mostly of insects and spiders, but the stomach contents of Chucao Tapaculos also included centipedes (Chilopoda) and isopods, and one even contained a snail. The *Scytalopus* species consume mainly tiny insects, whereas the Rusty-belted Tapaculo appears to feed almost entirely on bugs (Hemiptera).

Some rhinocryptids, including all three species of *Pteropochos*, also add berries and seeds, as well as grit, to their diet. In addition, a recent study of a *Scelorchilus* species, the Chucao

Tapaculo, in three different parts of Chile found that seeds were present in 28 of the 42 stomachs examined. The seeds were from a variety of plants, on Chiloé Island most commonly *Amomyrtus luma* and *Mirteola numularia* of the Myrtaceae. The birds could even be important in the dispersal of these plants.

With regard to the genus *Scytalopus*, a berry found in the stomach of a juvenile Paramo Tapaculo of the subspecies *opacus* was presumed to have been eaten by mistake, as none of 36 other sampled individuals of the same species, including both adults and juveniles, had eaten anything but insects. In contrast, berry seeds were found in the stomachs of three out of four Zimmer's



Some tapaculos have loud, very low-frequency, very low-frequency, resonant songs, which travel close to the ground. This is the case, for example, of the genera *Rhinocrypta* and *Scelorchilus*, the latter exemplified here by this **Chucao Tapaculo**. Many tapaculo vocalizations typically contain harmonics. Usually, either the fundamental or the first overtone is the loudest but sometimes two harmonics are equally presented. The complex "brzk" alarm call given by many species comprises of up to five equally loud harmonics.

[*Scelorchilus rubecula rubecula*, Villarrica National Park, Chile. Photo: Andrés Morya Hinojosa]



In several tapaculo species the song is delivered by both sexes in a duet. This advertising strategy is often favoured by non-dimorphic species which inhabit dense habitats. The female usually sings at a higher pitch, although some sound very similar to the males. The females of many *Scytalopus* species deliver squeaky, descending series very different from the trill or series of notes sung by the males. Interestingly, the **White-breasted Tapaculo** seen here is improving the resonance of its song by singing from a suitable cavity.

[*Scytalopus indigoticus*, Intervalles, Capão Bonito, São Paulo, Brazil. Photo: Edson Endrigo]



Tapaculos (*Scytalopus zimmeri*), in one exclusively and plentifully so. Seeds, berries and other plant material have occasionally been found in stomachs of three other *Scytalopus* species, these being Tschudi's (*Scytalopus acutirostris*), the Chusquea and the Blackish Tapaculos, as well as in those of the Ocellated Tapaculo of the monotypic genus *Acropternis*.

The dense and dark habitats occupied by tapaculos render these birds difficult to study. As a consequence, their foraging behaviour has been described on the basis of brief observations, and for a few species only.

*Pterotochos* and *Scelorchilus* species walk or run quickly, before stopping and scraping the ground with one foot, or "jump-scratching" with both feet simultaneously. Similar "jump-scratching", in which the bird throws earth and leaves backwards as it jumps awkwardly and slowly works its way into the ground, has also been reported for two species in monotypic genera, the Ochre-flanked Tapaculo and the Ocellated Tapaculo. Indeed, it is perhaps the principal foraging manner of the latter, the grotesquely long hind claw of which may be an adaptation for this behaviour.

The *Scytalopus* tapaculos glean prey from moss, litter, earth and rotting vegetation as they move along quickly in the undergrowth or on the ground. They can appear very mouse-like as they tunnel under roots, mossy outhangs and rocks, or through tussocks of grass. The single *Myornis* species, the Ash-coloured Tapaculo, mostly perch-gleans at clumps and horizontal branches of bamboo, but occasionally it works among bamboo leaf litter on the ground. The two bristlefronts appear to be more terrestrial, and have been seen digging with the head into leaf litter, during which process their vision is presumably aided by the elongated loreal feathers (see Morphological Aspects). Typically, the Rusty-belted Tapaculo walks slowly on the ground, often along decaying fallen trunks, stopping to uncover bugs by scratching the ground with one foot.

The two gallitos in the monotypic genera *Rhinocrypta* and *Teledromas* apparently also feed entirely on the ground, where they try to keep under cover and run quickly from bush to bush. One of them, the Sandy Gallito, has been observed scratching the ground with one foot. Although the four *Melanopareia* crescentchesters run on the ground in similar fashion to the latter species, they also perch-glean insects while working through low branches, in a manner recalling a furnariid spinetail (*Synallaxis*). Finally, the Spotted Bamboowren sometimes feeds on the ground,

but more often it climbs through dense undergrowth, occasionally ascending in viny thickets to as high as 7 m.

## Breeding

The nesting behaviour of the Rhinocryptidae is poorly known, and only for a single species, the Crested Gallito, have the details been recorded from the laying of eggs until the fledging of the young. Nests of only 18 of the family's 55 species have been described, and these show considerable differences between, and even within, genera. Some nests are deep cups, that of the Olive-crowned Crescentchest being tilted about 45 degrees, but many are globular with the entrance either at the top or at the side. All the nests of this family which have been found are fairly soft, made of root fibres, grass, moss, and a few small twigs. The majority are of moderate size, but the Ochre-flanked Tapaculo constructs a nest that has external measurements of 14-18 cm, and the nest of the Crested Gallito is also rather bulky. Two known nests of the Olive-crowned Crescentchest were made of vegetable fibre and palm leaves, while a third was constructed mainly of grass.

The Crested Gallito, the Ochre-flanked Tapaculo and the Olive-crowned Crescentchest place their nests above ground, hidden among tall grass or in a bush, in most cases within 2 m of the ground. Most tapaculo nests, however, are situated at the end of a tunnel under ground, among roots, or in rotten stumps. The birds themselves usually excavate the tunnels, sometimes in quite hard ground in the case of the Moustached Turca, but the White-throated Tapaculo often takes advantage of abandoned rodent burrows. The Black-throated and the Chestnut-throated Huet-huets normally dig burrows, but occasionally they nest in hollow trunks, in one case as high as 17 m above the ground.

No nests of the genera *Merulaxis*, *Myornis*, *Acropternis* and *Psilorhamphus* have been described. Indeed, very little is known about the breeding biology of any of the five species concerned.

Tapaculo eggs resemble those of furnariids. They are white and unmarked, like the eggs of most or all cavity-nesting birds, they are large for the size of the bird, they are rounded, almost like the eggs of an owl (*Strigiformes*), and they are lacking in sheen. An exception is the one species of *Melanopareia* for which details are available: the Olive-crowned Crescentchest lays eggs





Tapaculos feed primarily on a variety of arthropods and, at least in some species, plant matter in the form of seeds and berries. Because of the dense habitats frequented by many species, and the skulking nature of tapaculos in general, foraging behaviour is hard to observe and to date information has been gathered for only a few species. Some walk or run quickly before halting and scraping the ground with one foot or "jump-scratching" with both feet simultaneously. The *Scytalopus* tapaculos consume very small insects which are gleaned as they move rapidly through the undergrowth and along the ground. They operate in a manner reminiscent of small rodents as they tunnel under roots, moss and rocks or through dense tussocks of vegetation in search of food. Some species perch-glean whilst working through low vegetation, and forage amongst leaf litter on the ground. Others, such as the bristlefronts, are almost exclusively terrestrial and root about in deep litter. The **Crested Gallito** feeds entirely on the ground, often foraging under cover and running quickly from bush to bush, but sometimes, as here, in more open spots. The bird's crest is prominent at most times, perhaps most strikingly in the alert posture adopted when potential danger is detected, as illustrated by this individual.

[*Rhinocrypta lanceolata lanceolata*,  
Formosa Natural Reserve,  
Argentina.  
Photos: José & Adriana  
Calo]



Most tapaculo nests are situated at the end of a tunnel dug into an earth bank or rotten stump, or amongst roots, as illustrated here by the **Moustached Turca**.

These tunnels are often dug by the tapaculos themselves, but some species take advantage of burrows dug by other animals, such as rodents. Nesting behaviour in the tapaculos, like so many aspects of their biology, is rather poorly known. Nests of only some 18 species have been described to date, and the findings so far show considerable differences between, and even within, genera.

[*Pterotochos megapodius*.  
Left: El Yeso, Chile.

Right: Camino Farallones,  
Santiago, Chile.  
Photos: Manuel Marin]



which are ovoid and spotted, resembling the eggs of true antbirds. Normally, only two or three eggs are laid, but the Magellanic Tapaculo (*Scytalopus magellanicus*) has been reported occasionally to lay as many as four eggs in a clutch.

Both the Ochre-flanked and the White-breasted Tapaculos have been reported to lay twice a year, but it remains unknown if any other members of the family do so. So far as is known, the Slaty Bristlefront (*Merulaxis ater*) breeds only once a year.

Only for two of the 55 rhinocryptid species has the incubation period been documented. The White-breasted Tapaculo incubates for 15 days and the Crested Gallito for 16-17 days. Not surprisingly for such a poorly known family, the nestling period has been determined for only a single species, the Crested Gallito, the chicks of which spend 14-15 days in the nest from the time of hatching.

Males of the Crested Gallito and those of the White-throated and Magellanic Tapaculos are known to take part in the task of incubation. This may well also be the case for many other tapaculo species, although, among hundreds of specimens examined of north Andean species of *Scytalopus*, brood patches were found only on females.

In those species for which information is available, the chicks hatch naked, but soon become covered in down. Both parents care for the nestlings. Down is still present on the young for a few days after fledging, being visible as long, loose filaments at the tips of the feathers, especially those of the head. The fledglings are apparently sometimes fed by the female alone, and in any case are soon left to a reclusive existence, often in suboptimal habitat.

## Movements

So far as is known, all tapaculos are entirely resident, remaining in their territories all year around. Juvenile and immature birds are sometimes encountered in small patches of suboptimal habitat, but none has ever been found far from its typical haunts.

A Chilean study of the effect of "corridors" on dispersal was carried out by K. E. Sieving and colleagues. This demonstrated that the Black-throated Huet-huet, the Chucao Tapaculo and the Magellanic Tapaculo were all reluctant to use corridors of seemingly suitable habitat which were less than 10 m wide.

## Relationship with Man

The distinctive and loud songs and calls of some rhinocryptids have given rise to a number of onomatopoeic local names. Indeed, the name "tapaculo" is apparently itself onomatopoeic, originating from the distinctive "tá-pa-koo" call of the White-throated Tapaculo. Although this fact may be thought to render the name unsuitable for the family as a whole, the distinctive call nevertheless led to the adoption of the Spanish word *tapaculo*, an expression that literally means "covering the rear end" and is used to refer to the last soldier in a moving file. Whether the cocked tail of most rhinocryptid species has had any influence on the adoption of this name remains questionable, although several authors have taken this as a natural assumption. In any case, by cocking the tail the birds expose the rear end, rather than cover it. Charles Darwin thought that the posture of the Moustached Turca and the White-throated Tapaculo made the birds look quite ridiculous. W. H. Hudson was less mocking: the common name of "Gallito", meaning small hen, is used for *Rhinocrypta lanceolata*, a species which Hudson described as "looking wonderfully like a minute domestic fowl".

The voice of the Chucao Tapaculo figures repeatedly in the folklore of the indigenous Araucarian tribe of southern Chile. To hear the song from the left or the call from the right is considered no cause for concern. The opposite situation, however, with the call heard from the left or the song from the right, is taken as such a bad omen as to compel the traveller to return home immediately.

It is hardly surprising, however, that the dull plumage, retiring habits and unmusical song that characterize many members of this family have provided little inspiration among humans. No tapaculo species has been reported to have been successfully held in captivity, although a single Ocellated Tapaculo was kept at in New York Zoo, in the USA, where it survived for only a few months.

Although not often hunted, the Black-throated Huet-huet is said to have very delicately flavoured and palatable flesh. From personal experience, it can be added that the same is true of the Ash-coloured and Ocellated Tapaculos and the *Scytalopus* and *Melanopareia* species.





**The Elegant Crescentchest** has a restricted range. It inhabits dense scrub, usually with some tall grass, and thick undergrowth in woodlands, in the arid lowlands of the Tumbesian region of south-west Ecuador and north-west Peru. This Endemic Bird Area is severely threatened and remaining forest cover is now less than 5%. Fortunately the more arid areas, although affected by grazing and agriculture, are reasonably unaffected and this species is not currently considered to be at threat.

[*Melanopareia elegans paucalensis*, Lambayeque, Peru. Photo: J. S. Dunning/VIREO]

### Status and Conservation

Although most tapaculos are numerous where they are found, many of the species are confined to small geographical areas, rendering them vulnerable to habitat destruction.

The widespread clearance of Atlantic forest in eastern Brazil continues at an alarmingly "ferocious" rate, threatening the survival of Stresemann's Bristlefront and the Bahia Tapaculo. Both are restricted to small areas in coastal Bahia, and both are classified as Critical in terms of their conservation status. The bristlefront is known from only two specimens, one collected between 1831 and 1838 and the other in 1945, although it was not formally described until as late as 1960. A single individual was observed, photographed and tape-recorded in 1995 in a small reserve of 250 ha bordering the 5400-ha Una Biological Reserve, the biggest patch of protected habitat within the area covered by the two localities at which it has been collected. As subsequent searches have failed to locate the species, this remains the only observation of Stresemann's Bristlefront since 1945.

The Bahia Tapaculo was described from material collected in the 1980s, but there has been no report of it since then. The species is undoubtedly in need of urgent protection, if indeed it is still extant.

Clearly, if any surviving populations of these two Critically endangered rhinocryptids exist at all, they must be extremely tiny. Field surveys aimed at establishing the continued presence or otherwise of either species in the small region in which they have been recorded would seem to be an essential first step towards determining their conservation requirements. Even so, the extensive habitat loss and deterioration which have occurred in this part of eastern Brazil suggest that there is little cause for optimism.

Two other members of the family are considered to be globally threatened. The recently discovered Marsh Tapaculo, unknown to science until 1997, is classed as Endangered. This southern Brazilian species, often referred to as the Tall-grass Wetland Tapaculo, inhabits rushy marshes in eastern Paraná, a habitat facing total destruction in the near future. The difficulty of creating interest in the conservation of such a dull and incon-



**The White-breasted Tapaculo** is a rare to locally quite common resident of the undergrowth in lowland humid forests, forest borders and secondary woodland in coastal east Brazil. It is listed as Near-threatened because of the extent of the historical reduction in its range brought about by large-scale destruction and fragmentation of coastal forest in this part of Brazil.

[*Scytalopus indigoticus*, Boa Nova, Bahia, Brazil. Photo: Kevin J. Zimmer]



The **Brasilia Tapaculo** is typical of a number of tapaculos which are confined to small geographical areas, rendering them vulnerable to habitat destruction and other threats.

This Near-threatened species is locally common in the interior south of Brazil, where it inhabits humid gallery forest and dense riparian vegetation. Fortunately, it is found in six protected areas. At present, clearance for agriculture within its range appears to be having little impact on its habitat, but the annual burning of grassland, together with drainage, poses threats for the future.

[*Scytalopus novacapitalis*,  
Serra da Canastra,  
Mato Grosso, Brazil.  
Photo: Edson Endrigo]



spicuous bird, as well as the economic interests in altering these marshes, hampers efforts to preserve the species. Its situation must be considered to be serious, and action is again required as a matter of priority in order to ensure its survival.

At the other end of the range within which the family occurs, the Pale-throated Tapaculo (*Scytalopus panamensis*) is confined to the Tacarcuna Massif in the Darién gap, on the border between Panama and Colombia. Owing to forest clearance within its very restricted range, the species is considered Vulnerable. It appears still to be common, but if the Pan-American Highway is completed, as planned, the pressure on its habitat will accelerate drastically.

Five species are listed as Near-threatened, in each case because of continuing loss of habitat. The Brasilia Tapaculo frequents swampy gallery forest in a small area in central Brazil. It has now been found in six protected areas, and, although generally rare and occurring at low densities, it is reported to be locally common. Owing to its small range and the risk of fires destroying its habitat, which is often restricted to patches only 200 m wide, the species is nevertheless considered to be close to becoming threatened. The White-breasted Tapaculo, the Slaty Bristlefront and the Spotted Bamboowren are all confined to the rapidly dwindling Atlantic forest of east and south-east Brazil,

where further loss of habitat could push all three into the threatened category. The fifth Near-threatened rhinocryptid, the Marañon Crescentchest, inhabits arid scrub in a small area in the Río Marañón drainage, in northern Peru. Its habitat here has long suffered from the effects of cultivation, and the expansion of agriculture and stock-farming and, in the future, possibly also oil extraction represent major problems for the species.

In addition to the above, it is considered that two more species should probably be listed as Near-threatened, or even Vulnerable. The Ecuadorian Tapaculo is confined to humid forest undergrowth on the lower Pacific slope of the Andes in the provinces of Azuay and El Oro, in southern Ecuador, an area that will be completely deforested over the next few decades unless protective measures are taken. Its distribution parallels that of another threatened species, the El Oro Parakeet (*Pyrrhura orcesi*), classed as Endangered. Only a minute fraction of the habitat occupied by the two species is protected at present, far from sufficient for the survival of either of them.

Although tolerating a great degree of disturbance, the Unicoloured Tapaculo (*Scytalopus unicolor*), recently shown to be distinct from forms that were formerly ranked as races of it, should be considered at risk. Its range in the Marañón Valley of north-west Peru is tiny, and its habitat of dense shrubbery at 2000–3170 m is uncommon, under constant human pressure, and seriously at risk from fires. No part of its range enjoys protection.

Several other species of *Scytalopus* have very small ranges, but are not considered to be at risk at present. These include the Santa Marta (*Scytalopus sanctaemartae*) and Brown-rumped Tapaculos (*Scytalopus latebricola*), both of the Santa Marta Mountains in north Colombia, the Matorral Tapaculo (*Scytalopus griseicollis*) of the east Andes of Colombia, the Merida Tapaculo (*Scytalopus meridanus*), restricted to the west Venezuelan mountain range of that name, and the Lara Tapaculo (*Scytalopus fuscicauda*), which is found only in south Lara and Trujillo, in north-west Venezuela.

#### General Bibliography

Ames (1971), Anon. (1992a), Arctander & Fjeldsá (1994), Bock (1994), Cracraft (1981), Ericson *et al.* (2000), Feduccia & Olson (1982), Garrod (1877), Heimerdinger & Ames (1967), Irestedt, Fjeldsá *et al.* (2002), Irestedt, Johansson *et al.* (2001), Kreuger (1968), Olog (1972), Olson & Kurochkin (1987), Peters (1951), Plótnick (1958), Sibley (1996), Sibley & Ahlquist (1990), Sibley & Monroe (1990, 1993), Sibley *et al.* (1988), Sick (1954, 1960, 1985b), Sieving *et al.* (1996).

The **Bahia Tapaculo** is Critically Endangered. It is known from only a few fragments of coastal lowland forest in southern Bahia, south-east Brazil. This area was one of the first to be colonized by European settlers 400 years ago and now has a very high human population density. Widespread deforestation has occurred, which has left less than 10% of the original forest cover.

[*Scytalopus psychopompus*,  
Ituberá, Bahia, Brazil.  
Photo: Pedro Lima]









# Genus *PTEROPTOCHOS* Kittlitz, 1830

## 1. Chestnut-throated Huet-huet

### *Pteroptochos castaneus*

**French:** Tourco à gorge marron

**Spanish:** Huet-huet Gorgicastaño

**German:** Braunkehl-Bürzelstelzer

**Taxonomy.** *Pteroptochos castaneus* R. A. Philippi [Krumwiede] and Landbeck, 1864, Hacienda de la Puerta, 5000 feet [c. 1500 m], Colchagua, Chile.

Forms a superspecies with *P. tarnii*, and formerly considered conspecific. The two are geographically separated in W Argentina (Neuquén) by a distance of over 200 km. Recent studies have shown, however, that the two have been in contact several times during fluctuating climatic conditions; furthermore, they differ significantly in voice, and comparison of mtDNA (albeit based on small sample sizes) indicates genetic isolation for over 3 million years. Monotypic.

**Distribution.** C Chile, from Colchagua S to R Bio Bio (at headwaters, only N of R Laja), and immediately adjacent Argentina (W Neuquén).



**Descriptive notes.** 23 cm; male 158-185 g, female 130-175 g. Appearance of a large-bodied; short-tailed dark thrush (Turdidae). Adult has forecrown, supercilium, lower back and rump to tail-coverts chestnut, rump and tail-coverts with faint dark bars; hinderown, auriculars and back slaty, tail slaty black, wings dark brown, greater wing-coverts tipped buff to form bar; throat and breast chestnut, lower belly and flanks with blackish and pale rufous barring and squamations; iris dark brown, bare ocular skin pale flesh-coloured; tarsus black; bill black. Juvenile has forecrown barred with black, sides of head mixed chestnut and black,

greater wing-coverts tipped with black-bordered buff spots; throat and breast chestnut, barred or mottled with blackish; remainder of underparts blackish-brown, spotted and barred with whitish and pale cinnamon. **Voice.** Song, delivered as duet at dawn, at dusk, and up to 1 hour later, and sporadically during day, a series 5-7 seconds long of 22-31 notes at 420-550 Hz, at even or slightly accelerating pace of 4-5 notes per second, at first increasing in pitch and volume, then steady. Alarm loud and resonant, 1-4 "huet" notes at 1 kHz at pace of 2 notes per second, intervals between phrases 1-2 seconds long, fairly similar to alarm of *P. tarnii*; other calls include repeated, rapid series of 2-6 nasal "wehki" notes at 2-4 kHz, by both sexes; single "wehki" repeated every 3-9 seconds; sharp nasal note followed by hollow hoots, "wehki! wook wook wook"; and call homologous with single "huet" note of *P. tarnii*, differing in having several audible harmonics (sounding squeaky) and rising less in pitch.

**Habitat.** Humid forest, forest borders, and secondary woodland. In Neuquén, found in *Nothofagus obliqua* forest with large boulders and rock-lined, vegetated stream gulleys, both on steep slopes with little understorey and on gentle slopes with some undergrowth of *Chusquea culeou* bamboo; in same area absent from otherwise similar forest with extensive bamboo undergrowth, and from both *Nothofagus antartica* and *N. pumilio* forest. Also semi-open, drier *Austrocedrus chilensis* forest in Chile. Largely terrestrial, but sings from top of rock or from shady foliage low in tree, though typically higher up when agitated. Sea-level to 1600 m.

**Food and Feeding.** Reported food includes beetles, beetle grubs and seeds. Feeds on or near ground. Scrapes the ground with one foot, like *P. tarnii*, but sometimes perches on exposed boulders in the manner of *P. megapodius*.

**Breeding.** Lays in Nov or Dec. Nest an open cup of soft grass, placed in cavity at end of burrow 0.5-2 m long dug into bank, occasionally high above ground in hollow trunk. Clutch 2 eggs, 35.6 × 27.9 mm.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Central Chile EBA. Generally fairly common. Present in several protected areas in Chile, e.g. Laguna de Laja National Park. Distribution in Argentina limited to a very small area; present in Lagunas de Epulafquén Tourist Forest Reserve (75 km²).

**Bibliography.** Araya & Chester (1993), Behn (1944), Chesser (1999), Cofré (1999), Cory & Hellmayr (1924), Figueroa *et al.* (2000), Fjeldså & Krabbe (1990), Hellmayr (1932), Howell & Webb (1995b), Johnson (1967), Mazar Barnett & Pearman (2001), Meyer de Schauensee (1982), Pearman (2000), Pearman & Grigoli (2002), Ridgely & Tudor (1994), Stotz *et al.* (1996), Vuilleumier (1985).

## 2. Black-throated Huet-huet

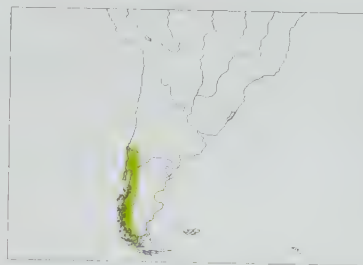
### *Pteroptochos tarnii*

**French:** Tourco huet-huet **German:** Schwarzkehl-Bürzelstelzer **Spanish:** Huet-huet Gorginegro

**Taxonomy.** *Hylactes Tarnii* P. P. King, 1831, Chiloé Island, and Port Otway, Gulf of Penas, Chile. Forms a superspecies with *P. castaneus*, and formerly considered conspecific. The two are geographically separated in W Argentina (Neuquén) by a distance of over 200 km. Recent studies have shown, however, that, despite earlier theories, the upper R Bio Bio is not an effective barrier to dispersal, suggesting that the two taxa have been in contact several times during fluctuating climatic conditions; in addition, significant vocal differences exist, and comparison of mtDNA (though based on small samples) indicates genetic isolation for over 3 million years. Monotypic.

**Distribution.** S Chile, from R Bio Bio (also locally on right bank S of R Laja) S to Brunswick Peninsula, and adjacent W Argentina (from Neuquén S to W Santa Cruz).

**Descriptive notes.** 23 cm; male 165-184 g, female 150-179 g, unsexed 133-171 g. Appearance of a large-bodied, short-tailed dark thrush (Turdidae). Adult has forecrown, lower back and rump to uppertail-coverts chestnut, rump and uppertail-coverts with faint dark bars, wings dark brown; hinderown,



back, tail, sides of head and neck, throat and upper breast slaty black; lower breast rufous-chestnut, lower belly and flanks with blackish and pale rufous barring and squamations; iris dark brown or pale brown (in one specimen noted as orange), bare ocular skin pale yellowish-flesh (occasionally blue?); bill black; tarsus black. Juvenile black all over, with some patches of chestnut speckling, especially on crown. **Voice.** Song a series 6-8 seconds long of 20-32 hollow "who" notes at 400-490 Hz, pace and volume increasing towards middle of phrase, then decreasing, pauses between phrases c. 10 seconds long. Also descending series (from 1000

to 580 Hz) of 11-19 hollow notes, "wok-wok-wok-wok-wu", 2 notes per second, series 6-5 seconds long, reminiscent of one of calls of *P. megapodius*. Alarm loud and resonant, 1-4 "huet" notes at 1 kHz, 2 notes per second, intervals between phrases 1-2 seconds long; other calls include single or double nasal note, single loud, slightly hollow "huuk!", squeaky single "wehki!" notes repeated every 2-1-4-8 seconds, and single "huet" similar to alarm.

**Habitat.** Inhabits dense parts of humid *Nothofagus*-dominated forest, with or without understorey of bamboo; also forest borders, second growth, pine (*Pinus*) plantations, open *Chusquea* bamboo thickets without tree cover; also hedgerows in agricultural areas. Largely terrestrial, but sings from top of rock or from shady foliage low in tree, though typically higher up when agitated. Occurs from sea-level up to c. 1000 m.

**Food and Feeding.** Insects; also some berries and seeds. Mainly terrestrial. Walks slowly within dense thickets, from time to time pausing to scrape ground with one foot, sometimes leaning sideways while doing so; also pecks at ground and flips debris with its bill. Occasionally emerges to feed in semi-open, but never far from cover.

**Breeding.** Lays in Nov or Dec. Nest an open cup of soft grass, placed in cavity at end of burrow 0.5-2 m long dug into bank or under roots of fallen tree, occasionally high above ground in hollow trunk. Clutch 2 eggs, occasionally 3, 38.1 × 28.4 mm. One study in S Chile yielded nesting success of 85% (42 nests).

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Chilean Temperate Forests EBA. Uncommon generally in Chile, but locally common (e.g. Mocha I); less numerous in Argentina than in Chile. Density range on Chiloé I (Chile) estimated at 3-1-6-15 birds/5 ha. Decreases markedly in abundance with decreasing size of habitat fragment. Most of its large range in Chile is protected, including several parks, e.g. Nahuelbuta, Puyehué and Vicente Pérez Rosales National Parks. In Argentina, occurs in Los Glaciares, Los Alerces, Los Arrayanes (only 10 km²), Lanín, Lago Puelo, and Nahuel Huapi National Parks.

**Bibliography.** Araya & Chester (1993), Behn (1944), Bullock (1935), Canevari *et al.* (1991), Chebez *et al.* (1999), Chesser (1999), Cofré (1999), Cory & Hellmayr (1924), De Santo *et al.* (2002), Figueroa *et al.* (2000), Fjeldså & Krabbe (1990), Fraga & Narosky (1985), Hellmayr (1932), Howell & Webb (1995b), Johnson (1967), Lane (1897), Mazar Barnett & Pearman (2001), Narosky & Yzurietta (1993), Pässler (1922), Pearman (2000), de la Peña (1989), Ridgely & Tudor (1994), Rosenberg (1986), Short (1969b), Sieving *et al.* (1996, 2000), Stotz *et al.* (1996), Straneck & Carrizo (1990b), Vuilleumier (1985), Willson *et al.* (1994).

## 3. Moustached Turca

### *Pteroptochos megapodius*

**French:** Tourco à moustaches

**German:** Weißbart-Bürzelstelzer

**Spanish:** Huet-huet Turca

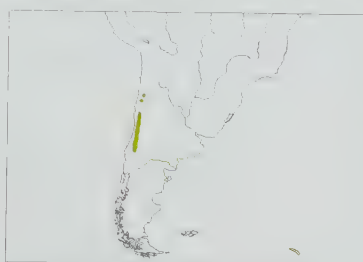
**Taxonomy.** *Pteroptochos megapodius* Kittlitz, 1830, Valparaíso, Chile.

Two subspecies recognized.

**Subspecies and Distribution.**

*P. m. atacamae* R. A. Philippi [Baños], 1946 - N Chile in Atacama (Vallenar and Copiapó).

*P. m. megapodius* Kittlitz, 1830 - C Chile from Coquimbo to Concepción.



**Descriptive notes.** 22.5 cm; 2 males 113 g and 135 g, 1 unsexed 95 g. Adult is grey-brown above, forehead paler and browner, feathers of crown with darker centres, lores and ear-coverts dark; supercilium, chin, upper throat and broad sides of throat white; rump and tail dull chestnut, tips of rump feathers barred blackish and whitish; lower throat and upper breast vinaceous cinnamon, remainder of underparts barred white, cinnamon and blackish-brown; iris dark brown; bill black; tarsus black. Juvenile is cinnamon to dusky above, with rump unbarred, lower underparts vinaceous cinnamon like breast,

derparts vinaceous cinnamon like breast, flanks only very faintly barred with dark brown. Race *atacamae* is smaller, much paler, especially below, lacks rufous tinge on underparts, has lower underparts much whiter. **Voice.** Song loud and resonant, a series 6 seconds long of 10-15 gurgling, crane-like "guerki" notes, falling steadily from 1.8 to 1.3 kHz, sometimes answered by mate with series lasting 2 seconds of 6 "who" notes falling from 1 to 0.8 kHz. Also 12-16 "who" notes, at first rising in volume and in pitch from 0.6 to 0.8 kHz, then steady, in series 3-4 seconds long. Calls include single "guerki" notes at 1.8 kHz, and bubbling phrases 2-2.5 seconds long of 10-15 "whoop" notes at 1.4-1.6 kHz; also a single sharp whistle.

**Habitat.** Matorral and scrubby and semi-open slopes, often where scattered rocks and boulders present. N race *atacamae* in semi-desert with rocky outcrops and loose earth. Occurs from sea-level to 3050 m, lowest in S.

**Food and Feeding.** Feeds on insects, as well as some berries and seeds. Primarily terrestrial, often feeding in the open. Walks and runs, scraping ground with one foot, sometimes removing surprisingly large stones.

**Breeding.** Lays in Sept-Dec, but construction of burrow may start earlier. Nest an open cup of soft grass, placed in cavity at end of burrow 1-3 m long dug into hillside, sometimes in quite hard



ground. Clutch 2 eggs, occasionally 3 (*atacamae* usually 3), measurements 35.3 × 26.6 mm (*megapodius*), 32.1 × 24.6 mm (*atacamae*).

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Central Chile EBA. Fairly common to common. Occurs in several protected areas, e.g. Cerro La Campana National Park.

**Bibliography.** Araya & Chester (1993), Cory & Hellmayr (1924), Figueroa *et al.* (2000), Fjeldså & Krabbe (1990), Hellmayr (1932), Johnson (1967), Kirwan & Hornbuckle (1997b), Lane (1897), Meyer de Schauensee (1982), Páessler (1922), Ridgely & Tudor (1994), Rosenberg (1986), Stattersfield *et al.* (1998), Steinheimer (2002), Stotz *et al.* (1996), Tabilo *et al.* (1996).

## Genus *SCELORCHILUS* Oberholser, 1923

### 4. White-throated Tapaculo

#### *Scelorchilus albicollis*

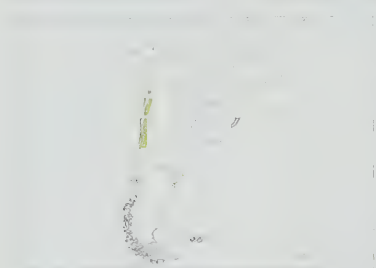
**French:** Tourco à gorge blanche **German:** Weißkehltapaculo **Spanish:** Tapaculo Gorgiblanco

**Taxonomy.** *Pteroptochos albicollis* Kittlitz, 1830. Valparaíso, Chile. Two subspecies recognized.

**Subspecies and Distribution.**

*S. a. atacamae* Hellmayr, 1924 - N Chile in SW Antofagasta (Quebrada Paposa), and from Atacama S to N Coquimbo.

*S. a. albicollis* (Kittlitz, 1830) - C Chile from Coquimbo S to Curicó.



**Descriptive notes.** 19 cm. Adult has forehead vinaceous cinnamon, turning grey-brown on rest of upperparts; distinct white supercilium, blackish lores and auriculars; rump brownish, sometimes (younger birds?) slightly barred with blackish; wings brown, wing-coverts tipped whitish and blackish; whitish below, becoming pale cinnamon on lower belly, with throat unmarked, rest of underside and sides of neck barred dark brown, bars widest on flanks and vent; iris dark brown; bill black, base greyish; tarsus black. Juvenile is barred throughout. Race *atacamae* is much paler than nominate, without brownish on upperparts,

and bill is shorter. **Voice.** Song loud and resonant, a series 2.5 seconds long of 9-10 barking "oer" notes, the first apart and at 0.7 kHz, the rest falling steadily from 0.8 to 0.6 kHz; occasionally shorter, slower phrases, and first note sometimes highest. Call is a harsh, short, pig-like grunt.

**Habitat.** Dense matorral. Usually on the ground, but sings from low perch. Sea-level to 1600 m, mostly below 1000 m.

**Food and Feeding.** Arthropods. Mainly terrestrial, foraging under dense cover.

**Breeding.** Lays in Sept-Oct. Nest an open cup of soft grass, placed in a cavity at the end of a tunnel 1-2 m long; sometimes digs own tunnel, but often uses abandoned burrow of rodent (*Octodon cumingi*). Clutch 2-3 eggs, measurements 27.3 × 23 mm (*albicollis*), 27.2 × 22 mm (*atacamae*); both sexes incubate, and both feed nestlings.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Central Chile EBA. Uncommon to fairly common. Only a small portion of its range has protected status, but it occurs in Cerro La Campana National Park and probably occurs in Bosque Fray Jorge National Park.

**Bibliography.** Araya & Chester (1993), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hellmayr (1932), Johnson (1967), Meyer de Schauensee (1982), Ridgely & Tudor (1994), Rosenberg (1986), Stattersfield *et al.* (1998), Stotz *et al.* (1996).

### 5. Chucao Tapaculo

#### *Scelorchilus rubecula*

**French:** Tourco rougegorge **German:** Rotkehltapaculo **Spanish:** Tapaculo Chucao

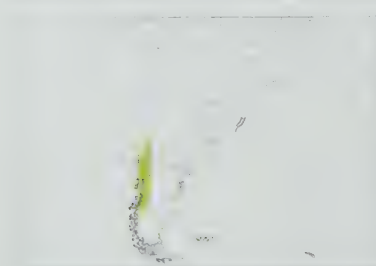
**Taxonomy.** *Pteroptochos rubecula* Kittlitz, 1830, Concepción, Chile.

Two subspecies recognized.

**Subspecies and Distribution.**

*S. r. rubecula* (Kittlitz, 1830) - S Chile, from Bio Bio (occasionally occurring N in Andean foothills as far as Colchagua) S to Aisén, and immediately adjacent parts of Argentina (from Neuquén S to W Chubut).

*S. r. mochai* Chapman, 1934 - Mocha I, in S Chile.



**Descriptive notes.** 18.5-19 cm; 1 male 53.7 g, 3 unsexed 42.6-45.4 g. Adult is dark fuscous-brown above, upper lores and supercilium rufous, lower lores to auriculars fuscous, spot below eye white; wings, rump and tail dark brown; throat and upper breast rufous, rest of underparts dark grey with white bars, flanks and vent rufous-brown to olive-brown; iris dark brown; bill black, base greyish; tarsus brown to black. Juvenile undescribed. Race *mocha* is larger than nominate. **Voice.** Song loud and resonant, an explosive 1-second burst of 6-7 notes, first and last notes churred and low-pitched (0.9 kHz), rest louder (second and

third loudest) and higher-pitched (1.4 kHz), pauses between phrases 4-12 seconds long. Calls include single, nasal "er" at 1 kHz, repeated every 2 seconds.

**Habitat.** Thickets of *Chusquea* bamboo in *Nothofagus*-dominated humid forest, forest borders, and secondary woodland. Mainly terrestrial, singing from ground or low branch. Occurs from sea-level up to 1500 m.

**Food and Feeding.** Diet includes large variety of arthropods, and seeds. Stomach contents found to include, among other items, centipedes (Chilopoda) and isopods, and once even a snail. In a study in three different parts of Chile, 28 of 42 stomachs examined contained seeds from a variety of plants, on Chiloe I most commonly of Myrtaceae (*Amomyrtus luma* and *Mirteola numularia*). Forages alone or in pairs, while walking around on the ground, usually under dense cover, but occasionally into semi-open areas.

**Breeding.** Lays in Sept-Oct in Chile, and in Nov in Argentina. Nest an open cup of soft grass, rootlets and some horse hair, placed in cavity at end of burrow 0.3-3 m long, 10 cm in diameter, dug by the birds into a bank or under roots of a fallen tree; of 208 nest-sites surveyed on Chiloe I, 13% were sited outside cavities, generally consisting of bamboo leaves and other vegetation woven together, sometimes with a partial roof. Clutch 2-3 eggs, 28.3 × 23 mm; both parents tend nestlings. Study on Chiloe I yielded nesting success of 64% (265 nests).

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Chilean Temperate Forests EBA. Fairly common to locally very common; less numerous in Argentina than in Chile; race *mocha* common on Mocha I (Chile). Density range on Chiloe I estimated at 3.1-6.15 birds/5 ha. Decreases markedly in abundance with decreasing size of habitat fragment; fragmentation of woodland may also make young birds more conspicuous, and thus more liable to suffer predation. A large portion of its range is protected; in Chile, occurs in e.g. Nahuelbuta, Puyehue and Vicente Pérez Rosales and National Parks. May possibly play an important role in the dispersal of seeds of certain plant species.

**Bibliography.** Araya & Chester (1993), Bullock (1935), Canevari *et al.* (1991), Chebez *et al.* (1999), Cofré (1999), Correa (1999), Correa *et al.* (1990), Cory & Hellmayr (1924), De Santo *et al.* (2002), Figueroa *et al.* (2000), Fjeldså & Krabbe (1990), Fraga & Narosky (1985), Hellmayr (1932), Johnson (1967), Lane (1897), Meyer de Schauensee (1982), Narosky & Yzurieta (1993), Páessler (1922), de la Peña (1989), Ridgely & Tudor (1994), Short (1969b), Sieving *et al.* (1996, 2000), Stotz *et al.* (1996), Straneck & Carrizo (1990b), Willson *et al.* (1994).

## Genus *RHINOCRYPTA* G. R. Gray, 1840

### 6. Crested Gallito

#### *Rhinocrypta lanceolata*

**French:** Tourco huppé **German:** Schopfbürzelstelzer **Spanish:** Gallito Copetón  
**Other common names:** (Grey) Gallito

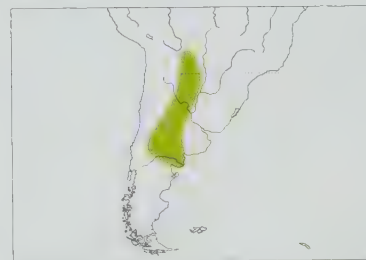
**Taxonomy.** *Rhinomya lanceolata* I. Geoffroy Saint-Hilaire, 1832, banks of the Rio Negro in Patagonia, southern Argentina.

Two subspecies recognized.

**Subspecies and Distribution.**

*R. l. saturata* Brodkorb, 1939 - SE Bolivia and W Paraguay.

*R. l. lanceolata* (I. Geoffroy Saint-Hilaire, 1832) - N & C Argentina S to Rio Negro and in S Buenos Aires.



**Descriptive notes.** 21 cm; male 59-63.5 g, female 51.5-64 g. Adult has crown, sides of head and nape cinnamon, streaked white, feathers of crown elongated and forming crest; upperparts olive-grey; throat and breast pale grey, becoming whitish on centre of underparts; side of breast and underbody chestnut, rear flanks, lower belly and vent olive-grey; iris brown; upper mandible black, lower medium grey with dark tip; tarsus black. Juvenile undescribed. Race *saturata* is darker, with back more brownish, rump more olive-brown (less greyish), white of belly more restricted, crissum darker. **Voice.** Song, given only during

breeding season, especially in early morning, a loud, resonant "chirrup" at 1.5 kHz repeated at intervals of 2-4 seconds. Call, repeated every 1-2 seconds, a trilled "wheerrr" at 2 kHz; alarm a violent "cre" at 3-4 kHz, given in series of 1-3 every 2-4 seconds.

**Habitat.** Dense thorny parts of open brush and undergrowth in Chaco woodland. Mostly terrestrial; sings from bush, sometimes from exposed perch. Sea-level to 1800 m; race *saturata* only in lowlands.

**Food and Feeding.** Feeds on arthropods. Walks or runs along the ground, or hops through low branches.

**Breeding.** Lays in Sept-Dec, in some years also in Jan. Nest is a bulky, untidy, globular structure, primarily constructed of grass but also of weed stems, bits of bark and plant fibres, and lined with hair, wool or cotton, with large irregular opening in one side; placed 1-2 m up in large, dense, thorny bush or small tree, preferentially *Capparis atamisquea* but sometimes *Geoffroea decorticans*, *Prosopis flexuosa*, *Condalia microphylla*, *Bulnesia retama*, *Atriplex lampa* or *Senecio*, or in *Trithrinax* palm; nest normally used for only a single season. Clutch 1-3 eggs, usually 2, measuring 27.7 × 20.8 mm, laid on alternate days; male takes part in incubation, which lasts 16-17 days; nestling period 14-15 days. Nest is sometimes parasitized by Shiny Cowbird (*Molothrus bonariensis*).

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common; although elusive for most of year, sometimes fairly bold during breeding season when singing. Occurs in several protected areas, e.g. Sierra de las Quijadas and Lihue Calel National Parks, Nacuanán Biosphere Reserve, El Leoncito Strict Nature Reserve, Formosa Nature Reserve and Chancani Natural Reserve, in Argentina.

**Bibliography.** Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Fraga & Narosky (1985), Hayes (1995), Herzog & Kessler (2002), Meyer de Schauensee (1982), Mezquida (2000, 2001a), Miserendino (1998), Narosky & Di Giacomo (1993), Narosky & Yzurieta (1993), Navas & Bo (1986), Nellar (1993), Nores *et al.* (1983), de la Peña (1989), Renssen & Traylor (1989), Ridgely & Tudor (1994), Schönwetter (1979), Short (1975), Stotz *et al.* (1996), Straneck & Carrizo (1990c), Vigil (1977), Wetmore (1926).



## Genus *TELEDROMAS*

Wetmore & J. L. Peters, 1922

### 7. Sandy Gallito

#### *Teledromas fuscus*

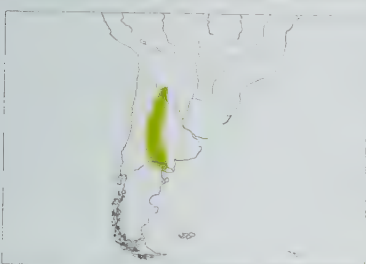
**French:** Tourco sable

**German:** Fahlbrauner Tapaculo

**Spanish:** Gallito Arena

**Taxonomy.** *Rhinocrypta fusca* P. L. Slater and Salvin, 1873, Mendoza, Argentina. Shows certain structural similarities with genus *Melanopareia*, but on basis of biochemistry belongs with typical tapaculos (see page 749). Monotypic.

**Distribution.** Andean slopes of Argentina, from SW Salta S to Rio Negro.



**Descriptive notes.** 17 cm; 2 males 35.4 g and 41.8 g, 1 female 35.8 g. Adult has crown and upperparts uniform pale cinnamon, short indistinct white supercilium, dark eyestripe; tail blackish, central feathers as back; underparts whitish, side of breast washed with greyish, flanks and vent washed with pale cinnamon; iris dark brown; bill black; tarsus black. Juvenile probably similar to adult. **VOICE.** Song, reminiscent of that of a *Melanopareia*, repeated loud "tehowk" notes at 2.1 kHz, at 4.5 notes per second, first 1-2 notes weaker; phrases repeated every 4-5 seconds and composed of 8-10 notes in Salta, of 3-5 notes in Rio Negro;

alternative song (Rio Negro) starts with 1-3 low guttural croaks, suddenly breaking into loud rising series of c. 8 "queec" notes, slightly higher-pitched than normal song. Call a series 4 seconds long of 14 evenly spaced notes, introduced by 2 low trebled calls, either slowly descending (Rio Negro) or faster, first rising and then dropping sharply (Salta).

**Habitat.** Inhabits sparse arid scrub on sand and gravel, especially near banks of dry washes and quebradas. Terrestrial; generally sings from branch low in a bush. Occurs up to 3500 m, to 4000 m in Salta.

**Food and Feeding.** Diet thought to be mostly arthropods. Feeds entirely on the ground, attempting to stay under cover; runs very quickly from bush to bush, with long strides (15 cm). Has been observed scratching ground with one foot.

**Breeding.** Lays in Nov-Feb. Nest an open cup of bits of grass, placed at end of tunnel 40-50 cm long, 6-7 cm in diameter, dug into loose soil of a bank; nest chamber c. 10 cm high; 1 nest reportedly lined with moss and lichens, and placed among densely tangled branches near ground. Clutch 2 eggs, measuring 27.8 x 20 mm.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Apparently uncommon, but easily overlooked. Several protected areas exist within its range; known to occur in Lihué Calel National Park, Sierra de las Quijadas National Park and Nacuñán Biosphere Reserve. As habitat occupied by this species is not attractive for agricultural development, its conservation status would appear to be secure at least for near future.

**Bibliography.** Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1924), Ejlsdå & Krabbe (1990), Fraga & Narosky (1985), Mazar Barnett & Pearman (2001), Meyer de Schauensee (1982), Narosky & Yzurietta (1993), Navas & Bó (2001), Nellar (1993), Norez *et al.* (1983), Olog (1958), de la Peña (1989), Ridgely & Tudor (1994), Schönwetter (1979), Stotz *et al.* (1996), Wetmore (1926).

## Genus *LIOSCELES* P. L. Slater, 1865

### 8. Rusty-belted Tapaculo

#### *Liosceles thoracicus*

**French:** Tourco ceinturé

**German:** Brustflecktapaculo

**Spanish:** Tapaculo Amazónico

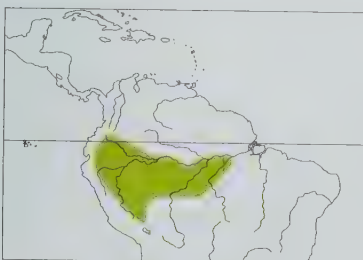
**Taxonomy.** *Pteroptochus thoracicus* P. L. Slater, 1865, Salto do Girão, Rio Madeira, Brazil. Geographical variation relatively weak; race *dugandi* considered doubtfully distinct. Birds from SE Peru presumed to belong to nominate *thoracicus*, but further study required. Three subspecies recognized.

**Subspecies and Distribution.**

*L. t. dugandi* Meyer de Schauensee, 1950 - SE Colombia and adjacent W Brazil on R Solimões.

*L. t. erithacus* P. L. Slater, 1890 - from E Ecuador S to E Peru (S to mouth of R Urubamba).

*L. t. thoracicus* (P. L. Slater, 1865) - W & C Amazonian Brazil (E to R Tapajós), and probably this race in SE Peru.



**Descriptive notes.** 19.5 cm; male 39-42 g. Adult plumage somewhat variable individually; forecrown grey-brown, crown and nape dusky brown, narrow white supercilium, dusky grey auriculars; back, rump and wings medium reddish-brown, wing-coverts with black subterminal band and often with a whitish central spot; tail grey-brown; throat white, streaked black and white at side; sides of breast grey, white centre of upper breast crossed by band of yellow and orange-brown (band somewhat variable in shape and colour), centre of lower breast white; flanks and vent closely barred black, brown and white;

iris dark brown; upper mandible black, lower white; tarsus brown. Juvenile apparently very similar to adult. Race *erithacus* differs from nominate in having on average browner crown, broader deep breastband that is also deeper orange-brown in colour and with greater tendency towards pale yellow wash on breast below band; *dugandi* has rufous breastband that continues up onto sides of neck and throat. **VOICE.** Song loud, a single, easily imitated whistled note at 1.2-1.3 kHz, repeated at intervals of 2-5 seconds, sometimes for minutes on end, and terminating in evenly descending series 4-5 seconds long of 9-12 notes at 1.4-1.3 kHz; descending series occasionally given alone. Calls include a repeated, sharp "cree" or "cree-cree" at 2.5 kHz with several audible harmonics, and also a "tehure" at 1.1-1.3 kHz (resembling the call of a *Chamaeza anthruthus*).

**Habitat.** Humid *terra firme* forest, often near treefalls, less often in flooded forest (*várzea*). Terrestrial; vocalizes from ground or from low branch. Lowlands to 600 m, occasionally 900 m; up to 1000 m in Peru.

**Food and Feeding.** Feeds mainly on terrestrial bugs (Hemiptera). Forages in pairs or alone. Slowly walks and hops on forest floor, often moving along fallen trunks; picks up bugs from the surface of the litter.

**Breeding.** Juvenile collected in Oct in SE Peru. Single known nest was spherical, made of small twigs, grasses, lichens, mosses, small leaves and clumps of earth, lined mostly with soft grasses, and set into ground within root system of a small tree; opening was at top of the nest and led directly into the open. No other information.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon; locally fairly common or common. Occurs in several extensive protected areas, e.g. Cuyabeno Reserve, Ecuador, and Manu National Park and Biosphere Reserve, Peru.

**Bibliography.** Best *et al.* (1997), Butler (1979), Cory & Hellmayr (1924), Gyldenstolpe (1951), Hilty & Brown (1986), Mee *et al.* (2002), Meyer de Schauensee (1982), Olalla (1937), Oren & Parker (1997), Parker *et al.* (1982), Pinto (1978), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Rosenberg (1986), Ruschi (1979), Schubart *et al.* (1965), Sick (1993), Stotz, Fitzpatrick *et al.* (1996), Stotz, Lanyon *et al.* (1997), Terborgh *et al.* (1984), Zimmer (1930).

## Genus *ACROPTERNIS* Cabanis & Heine, 1859

### 9. Ocellated Tapaculo

#### *Acropternis orthonyx*

**French:** Mèruxale ocellé

**German:** Perlmanteltapaculo

**Spanish:** Tapaculo Ocelado

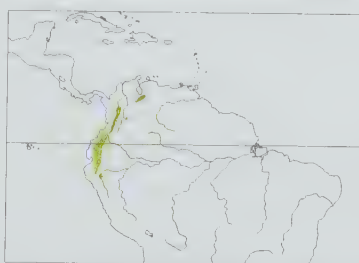
**Taxonomy.** *Merulaxis orthonyx* Lafresnaye, 1843, Colombia.

Geographical variation weak; species possibly better treated as monotypic. Two subspecies tentatively recognized.

**Subspecies and Distribution.**

*A. o. orthonyx* (Lafresnaye, 1843) - Andes of Trujillo, Mérida and Táchira in NW Venezuela, and E & C Andes of Colombia.

*A. o. infuscatus* Salvadori & Festa, 1899 - Andes of Ecuador (S in W to Chimborazo) and NW Peru (Cerro Chinguela and Cordillera Colán, in S Amazonas).



**Descriptive notes.** 21.5 cm; male 90-100 g, female 81-89 g. Adult has lores, forecrown, throat and sides of neck and head orange-chestnut, crown, back and wing-coverts black, crown spotted with buff, rest white-spotted, rump and uppertail-coverts orange-chestnut; remiges dark brown, narrowly edged reddish-brown; tail dusky brown; underparts black, mixed with dark rufescent brown and spotted with white, lower flanks and vent chestnut, centre of belly dark olive-brown; iris brown; bill laterally compressed, but culmen flat and forming narrow "plate" along top of bill, upper mandible grey, lower dusky grey; tarsus

dark grey-brown; claw of hallux extremely long, c. 25 mm, and straight. Juvenile is similar to adult, but rufous of head replaced by blackish, underparts without spots, and feathers of breast and upper belly have whitish shafts. Race *infuscatus* is very like nominate, but underparts blacker (less a mixture of black and dark brown). **VOICE.** Song 0.4-0.5 seconds long, repeated at intervals of 2-5 seconds for several minutes, a piercing, single, falling "keoo", mainly at 2-3 kHz, falling abruptly to 1 kHz at end; sometimes answered by female with series 3-5 seconds long of 4-7 similar whistles. Call by both sexes 0.3-0.4 seconds long, repeated at 2-second intervals, a sharp "kee" at 1.5-1.9 kHz with 3-4 overtones.

**Habitat.** Dense thickets of *Chusquea* bamboo, patches of *Neurolepis* cane in mossy *Polylepis* woodland, and dead tangles in undergrowth of humid montane forest. At 1900-3900 m, mostly above 2500 m.

**Food and Feeding.** Recorded food items include insects (e.g. beetles), a spider, and plant material. Walks, hops and runs through dense undergrowth and low tangles, occasionally on mossy branches 4 m up. Hops on ground; digs into litter with both feet simultaneously, making an awkward jump as it throws leaves backwards, presumably aided in this process by the long hind claw.

**Breeding.** Nothing known.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Considered to be generally uncommon to fairly common in Ecuador; rare in N Peru. Occurs in several protected areas, e.g. in Podocarpus National Park (North) and Paschoa Forest Reserve, in Ecuador, and also in Guaramacal National Park, in Venezuela.

**Bibliography.** Bloch *et al.* (1991), Butler (1979), Chapman (1926), Cory & Hellmayr (1924), Cresswell *et al.* (1999), Ejlsdå & Krabbe (1990), Hilty (1985, 2003a), Hilty & Brown (1986), Krabbe *et al.* (1998), Lentino *et al.* (1984), Meyer de Schauensee (1982), Meyer de Schauensee & Phelps (1978), Negret (2001), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Slater & Salvin (1879), Sornoza (2000), Stotz *et al.* (1996), Taylor (1995), Williams & Tobias (1994).



# Genus *EUGRALLA* Lesson, 1842

## 10. Ochre-flanked Tapaculo

### *Eugralla paradoxa*

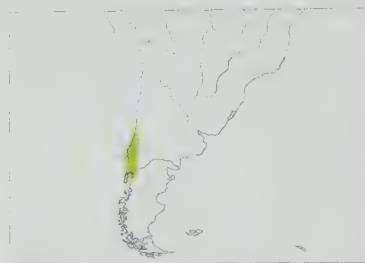
French: Mêrulaxe à flancs ocres    German: Rostflankentapaculo    Spanish: Churrín Grande

**Taxonomy.** *Troglodytes paradoxus* Kittlitz, 1830, Concepción, Chile. Monotypic.

**Distribution.** SC Chile, from S Santiago to Chiloé (including Mocha I), and adjacent W Argentina (W Neuquén and Rio Negro).

**Descriptive notes.** 14.5 cm; 2 males 28.6 g and 30.5 g, unsexed 25.5-29 g, mean of unsexed sample from Chiloé 125 g. Rather distinctive tapaculo, having maxilla elevated at base, in profile continuous with forehead. Adult has upperparts dark grey, lower rump light tawny-brown, tail dark brownish-grey; throat and breast grey, centre of lower belly pale grey to white, flanks tawny-brown, abdomen and vent clay-coloured; iris dark brown; bill blackish, grey base; tarsus bright yellowish. Juvenile is barred with dusky and pale cinnamon to rufous throughout, especially on back, rump, and tips of wing-coverts and inner remiges. **Voice.** Song c.1 second long, repeated at intervals of 2-4 seconds, a series of 3-5 short, sharp "cheek" notes, each falling from 3.6 to 2.2 kHz (first overtone). Alarm or excited song by both sexes similar, but pace more rapid, with 5-12 notes in a series 0.4-1.1 seconds long, volume increasing over first few notes in each series. Contact call by both sexes a softer "kek" at 1.6-1.7 kHz with equally loud first overtone, presumed female higher-pitched, varied by low clucking note.

**Habitat.** Very dense humid undergrowth of *Nothofagus*-dominated forest and mature secondary woodland, especially in bamboo. Sea-level to 900 m, perhaps also higher.



**Food and Feeding.** Probably arthropods. Forages in pairs, members of which keep in vocal contact; moves mouse-like on and near ground in dense thickets, following same route every day with clock-like regularity. Methods include "jump-scratching" with both feet simultaneously, whereby earth and leaves are thrown backwards as the bird jumps awkwardly, as it slowly digs its way into the ground.

**Breeding.** Lays in Sept and again in Nov; double-brooded. Nest large, external measurements 14-18 cm, and globular, with side entrance, made of straw and softer grass, often covered with dry leaves, lined with soft

grasses, and placed 1-2 m (occasionally 7 m) up in thick bush, small tree or heap of dry branches and dead leaves; nest chamber 8 cm in diameter, 5-6 cm deep below entrance hole. Clutch 2 eggs, rarely 3, measuring 23.4 × 18.9 mm; both parents feed young.

**Movements.** Presumably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Chilean Temperate Forests EBA and Central Chile EBA. Generally uncommon to locally fairly common; common in S part of range. Density range on Chiloé 1 estimated at 0.0-1.25 birds/5 ha. Decreases markedly in abundance with decreasing size of habitat fragment. Occurs in several protected areas in Chile, e.g. Alerce Andino, Chiloé, Nahuelbuta and Puyehué National Parks.

**Bibliography.** Araya & Chester (1993), Bullock (1935), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Christie & Rubulis (1997), Cofré (1999), Cory & Hellmayr (1924), De Santo *et al.* (2002), Delhey & Pérez (1996), Fjeldså & Krabbe (1990), Fraga & Narosky (1985), Gil (1991), Hellmayr (1932), Johnson (1967), Lane (1897), McPherson (1998, 1999), Meyer de Schauensee (1982), Narosky & Yzurieta (1993), Pässler (1922), de la Peña (1989), Ridgely & Tudor (1994), Rosenberg (1986), Schönwetter (1979), Sieving *et al.* (1996, 2000), Stotz *et al.* (1996), Vuilleumier (1985), Willson *et al.* (1994).









PLATE 79

inches 4  
cm 10



## Genus *SCYTALOPUS* Gould, 1837

### 11. Marsh Tapaculo

#### *Scytalopus iraiensis*

**French:** Mèrulaxe herbicole **German:** Flussaentapaculo **Spanish:** Churrin Palustre  
**Other common names:** (Tall-grass) Wetland Tapaculo

**Taxonomy.** *Scytalopus iraiensis* Bornschein *et al.*, 1998, right bank of Rio Iraí, c. 900 m, Quatro Barras, Paraná, Brazil.

Closely related to *S. speluncae*. Monotypic.

**Distribution.** S Brazil, in river basins of Iguaçu and Tibagi, in E Paraná.



**Descriptive notes.** 10.5 cm; male 14.5–15 g, two females 12.4 g. A small, dark tapaculo. Adult is black or blackish above; below, grey of throat grades to dark grey on rest of underparts; relatively restricted area on flanks is dark brown with a few faint and ill-defined dark bars; iris dark brown; bill blackish; legs dull flesh-coloured. Presumed immature or subadult is slightly lighter in colour, with browner and more distinctly barred flanks. **Voice.** Song of 30 or more seconds' duration, first notes longer, churred, lower-pitched, with several distinctive harmonics, and at relatively slow pace, the following pure and

increasing in pitch and pace to become an even repetition of the same "tchek" note at 5 per second; similar to song of closely related *S. speluncae*, but the fundamental louder than the first overtone and beginning of song distinctive. Alarm a sharp, emberid-like "pie" at 3.2 kHz, usually repeated 5–10 times, singly or in pairs, at intervals of 5–10 seconds.

**Habitat.** Tall, dense, seasonally inundated grassland dominated by fairly uniform cover of spike-rush (*Eleocharis*), other Cyperaceae, and grasses. Locally, also patchy tussocks reaching only 20–40 cm above the water. Occurs at 750–950 m.

**Food and Feeding.** Feeds on insects, including bugs (Hemiptera), cicadas (Cicadidae), beetles, eggs of cockroaches (Blattodea), and other small arthropods. Perch-gleans from vegetation near ground; climbs up and down stems of rushes and bushes.

**Breeding.** Specimen in Dec had partially developed gonads; gonads inactive in three others collected in May and Jun. No other information.

**Movements.** Probably sedentary.

**Status and Conservation.** **ENDANGERED.** Rare; total population estimated at fewer than 1000 birds, possibly only half that. Has been located in 24 localities, in all of which only limited habitat remains (1–350 ha); does not occur in any protected area. Range small (490 km<sup>2</sup>) and greatly fragmented, and remaining patches of habitat threatened by systematic draining through canalization schemes for improving agricultural land and pasture. Type locality already flooded after construction of dam, and three further dam projects planned in area; species was originally considered common at type locality, but now extinct. Also, urbanization and industrial development, extraction of subsurface sand, and fires are serious threats; fires, in addition to posing direct dangers to the birds and their habitat, can seriously damage native plant communities, which then give way to other invasive species. Proposed conservation measures include abandonment of plans for further dam construction within the species' range, cessation of drainage, sand extraction and burning, and creation of protected areas, as well as surveys for the species in nearby areas and research on its ecology.

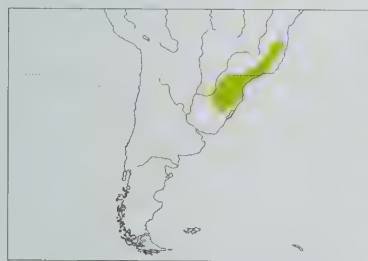
**Bibliography.** Anon. (1998b, 1998c, 1998d, 1998e, 1999a, 1999b), Astor (1998), Bornschein, Pichorim & Reinert (2001), Bornschein, Reinert & Pichorim (1998a, 1998b), Cordeiro (2001), Curson & Lowen (2000a), Sangster (1999b), Stattersfield & Capper (2000).

### 12. Mouse-coloured Tapaculo

#### *Scytalopus speluncae*

**French:** Mèrulaxe souris **German:** Mausgrauer Tapaculo **Spanish:** Churrin Plomizo

**Taxonomy.** *Malacorhynchus speluncae* Ménétries, 1835, São João del Rei, Minas Gerais, Brazil. Closely related to *S. iraiensis*. Some geographical variation in voice suggests that present species may involve more than a single taxon; further research required. Birds from NE Argentina (Misiones) have longest bill and shortest wing, but no other differences sufficient to warrant subspecific separation. Monotypic.



**Distribution.** E & SE Brazil in interior S Bahia, W Espírito Santo and S Minas Gerais S to Rio Grande do Sul, and NE Argentina (Misiones); sight records from SE Paraguay (Caazapá) require confirmation.

**Descriptive notes.** 10.5 cm; male 11.5–16 g, female 12.5–15 g. A small, dark tapaculo, often without brown on flanks. Male is uniformly dark grey; iris dark brown; bill blackish; tarsus dark brown. Female is similar to male, but usually somewhat browner, with some lightly barred brown on flanks. Juvenile is dusky-barred brown throughout; immature and subadult washed with brown above, variably

barred with dusky on wing and underparts. **Voice.** Song usually 6–20 seconds long, a "tseh" note at 3.7–5 kHz (first overtone), repeated at 5–6 notes per second, slower in Bahia (3–5 per second), sometimes beginning with slower, lower notes of different quality; similar to song of closely related *S. iraiensis*, but shorter, the fundamental softer than the first overtone, and beginning of song with shorter notes at faster pace; a 4–4.2 kHz note repeated somewhat irregularly at intervals of c. 2 seconds, "tsee, tsee", probably given by female. Call a short "birret"; also a rapid series of 4–5 sharp notes at 4 kHz, a 2 kHz "it" as 2–3 notes, and a complex "brzk" with 5 audible harmonics.

**Habitat.** Inhabits dense humid forest undergrowth, including pure stands of *Chusquea* and *Arthrostylidium* bamboo, where it frequents piles of dead stalks. Occurs at 1000–2500 m, lower in S; locally, overlaps in range with *S. indigoticus*, at 800–1500 m.

**Food and Feeding.** Diet known to include tiny insects. Feeds while hopping rapidly along on the ground, or within 1 m of it, crossing small open spaces very quickly; appears mouse-like.

**Breeding.** Almost no information. Single clutch collected in Sept in Argentina (Misiones), 2 eggs, 20.6 × 16.7 mm and 20.7 × 16.8 mm. Nest not described.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Fairly common to locally common in Brazil, but uncommon in Rio Grande do Sul; reported to be "abundant" in Argentina (Misiones). In Brazil, not rare in Serra do Caparaó National Park, where more frequent than in Rio de Janeiro; also fairly common in Itatiaia National Park, and common in high parts of Serra do Mar State Park. Found in several other protected areas in Brazil, e.g. Iguaçu National Park, Aparados da Serra National Park and Serra dos Órgãos National Park. In Argentina, occurs in Iguazú National Park. If further research indicates that this taxon does, in fact, encompass more than one species, it is possible that certain conservation measures may be needed.

**Bibliography.** dos Anjos & Schuchmann (1997), dos Anjos *et al.* (1997), Belton (1985), Bencke & Kindel (1999), Bornschein *et al.* (1998a), Brooks, Barnes *et al.* (1993), Brooks, Clay *et al.* (1995), Buzzetti (2000), Canevari *et al.* (1991), Chebez *et al.* (1999), Cordeiro (2001), Cory & Hellmayr (1924), Esteban (1951a), Fraga & Narosky (1985), Goerck (1999a), Gonzaga *et al.* (1995), Holt (1928), Mauricio & Dias (1998), Narosky & Yzurietta (1993), Parker & Goerck (1997), Parrini *et al.* (1999), Partridge (1954), de la Peña (1989), Ridgely & Tudor (1994), do Rosário (1996), Ruschi (1979), Sargeant & Wall (1996), Schubart *et al.* (1965), Scott & Brooke (1985), Sick (1960, 1985d, 1993), Stotz *et al.* (1996), Straneck & Carrizo (1990a), Tobias *et al.* (1993), Viellard (1990a).

### 13. Brasília Tapaculo

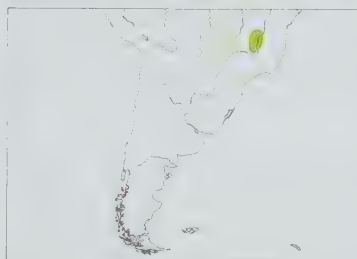
#### *Scytalopus novacapitalis*

**French:** Mèrulaxe de Brasília **German:** Brasiliatapaculo **Spanish:** Churrin de Brasília

**Taxonomy.** *Scytalopus indigoticus novacapitalis* Sick, 1958, Brasília, Distrito Federal, Brazil.

Field observations and tape recordings from C Minas Gerais, purportedly of this species, appear to be referable to a new, as yet undescribed species; further study needed. Monotypic.

**Distribution.** S Brazil, locally in S Goiás, Distrito Federal and W Minas Gerais.



**Descriptive notes.** 11 cm; one male 19.2 g, two unsexed 15.6 g and 18.6 g. A small tapaculo with light underparts. Adult is dark bluish-grey above, lower back and rump reddish-brown; pale grey below, centre of belly whitish, flanks and vent extensively rufous with grey bars; iris dark brown; upper mandible blackish, lower slightly paler; tarsus yellowish-brown. Juvenile not described. **Voice.** Song, given in late morning, a repetition up to 1 minute long of "ewk" note at 2.5–3.5 kHz (fundamental), 1–1.3 notes per second; sometimes, another bird (presumably female) duets with similar but higher-pitched song. Alarm a

rapid series of 6–8 sharp 2.5 kHz (fundamental) notes, with almost equally loud first overtone, "che-te-te"; call a loud series of "chip", 5 per second, rising in volume.

**Habitat.** Swampy gallery forest, especially permanently flooded parts dominated by *Blechnum* ferns and *Euterpe* palms. Occurs at 800–1000 m.

**Food and Feeding.** Recorded food items include insects (pupae, larvae, small imagoes), spiders, and centipedes (Chilopoda). Mainly terrestrial.

**Breeding.** One specimen with active gonads in Jul. No further information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Central Brazilian Hills and Tablelands EBA. Generally rare; locally common. Occurs at low density, and has local distribution. Present in at least six protected areas, including Brasília and Serra da Canastra National Parks (*Scytalopus* tapaculos occurring in Serra do Cipó and Chapada Diamantina National Parks, in C Minas Gerais, apparently belong to an undescribed species). Although its habitat has suffered less from clearance for agriculture than has adjacent *campo cerrado*, regular annual burning of grassland in the latter has led to loss of some habitat through associated fires; habitat has also been lost through wetland drainage.

**Bibliography.** Bornschein *et al.* (1998a), Cavalcanti (1999), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Gorge & Long (1997), Ferreira de Vasconcelos *et al.* (1999), King, W.B. (1978/79), Machado *et al.* (1998), Meyer de Schauensee (1982), Negret & Cavalcanti (1985), Negret & Teixeira (1983), Pinto (1978), Ridgely & Tudor (1994), Ruschi (1979), Schubart *et al.* (1965), Sick (1960, 1985d, 1993), Silveira (1997, 1998), Stattersfield & Capper (2000), Stotz *et al.* (1996), Tobias *et al.* (1993), Viellard (1990a), Wege & Long (1995), Willis & Oniki (1991).

### 14. White-breasted Tapaculo

#### *Scytalopus indigoticus*

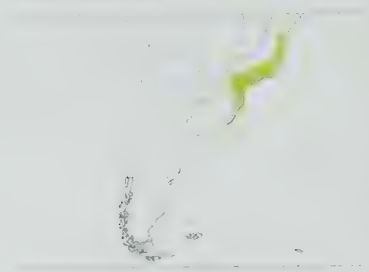
**French:** Mèrulaxe à poitrine blanche **German:** Weißbrusttapaculo **Spanish:** Churrin Pechiblanco

On following pages: 15. Bahia Tapaculo (*Scytalopus psychopompus*); 16. Bolivian Tapaculo (*Scytalopus bolivianus*); 17. White-crowned Tapaculo (*Scytalopus atratus*); 18. Santa Marta Tapaculo (*Scytalopus sanctaemartae*); 19. Rufous-vented Tapaculo (*Scytalopus femoralis*); 20. Long-tailed Tapaculo (*Scytalopus micropterus*); 21. Narino Tapaculo (*Scytalopus vicini*); 22. Ecuadorian Tapaculo (*Scytalopus robbinsi*); 23. Choco Tapaculo (*Scytalopus chocoensis*); 24. Pale-throated Tapaculo (*Scytalopus panamensis*); 25. Silvery-fronted Tapaculo (*Scytalopus argentifrons*); 26. Caracas Tapaculo (*Scytalopus caracae*); 27. Merida Tapaculo (*Scytalopus meridanus*); 28. Brown-rumped Tapaculo (*Scytalopus latebricola*); 29. Spillmann's Tapaculo (*Scytalopus spillmanni*); 30. Chusquea Tapaculo (*Scytalopus parkeri*).



**Taxonomy.** *Myiothera indigotica* Wied, 1831, near Salvador, Bahia, Brazil. Should possibly include *S. psychopompus* as a race or, perhaps, a variant; if so, type locality possibly in error. Monotypic.

**Distribution.** SE Brazil from E Bahia (near Salvador) S to C Paraná, E Santa Catarina and extreme NE Rio Grande do Sul.



**Descriptive notes.** 11 cm; male 13-18 g, female 12-16 g. A small tapaculo with mostly white underparts and barred flanks. Male has small whitish spot on lores, often a few whitish spots behind eye; upperparts dark to blackish blue-grey, lower back and rump reddish-brown; throat and central underparts white, side of underbody dark blue-grey, flanks and vent extensively chestnut-rufous with distinct dusky barring, thighs brown with dark bars; birds from Espírito Santo have dark of underbody extending to side of breast, darker flanks with weaker barring; iris dark brown; upper mandible blackish, lower pale

grey to yellow; tarsus yellowish-brown. Female resembles male, but upperparts browner. Juvenile is brown, barred dusky; immature like female. **Voice.** Song a trilled repetition 7-8 seconds long of a 1 kHz (fundamental) note, 15-16 notes per second, gradually increasing in volume over the initial 1-2 seconds; when harmonics audible, second overtone sometimes (always?) louder than first.

**Habitat.** Ground and lower parts of undergrowth of open forest, edge of closed forest, and dense secondary forest. Occurs in lowlands, up to 1500 m; generally found lower than *S. speluncae*, but some overlap locally above 800 m.

**Food and Feeding.** Insects. Forages mouse-like on, and occasionally just above, the ground, often not cocking tail.

**Breeding.** Reported to be double-brooded in Espírito Santo. 1 nest found was of roots and moss, with some feathers on the inside, and placed in a heap of leaves alongside a tree trunk. Clutch 2 eggs, 20.8 × 17 mm; incubation period 15 days.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Rare to locally fairly common. Occurs in lower part of Itatiaia National Park, in Fazenda Intervalos State Reserve, in Augusto Ruschi Biological Reserve, in Caraça Natural Park, and presumably also in several other (small) protected areas. Although believed not to be at immediate risk, the species has suffered from widespread and continued forest clearance, resulting in serious fragmentation of its habitat.

**Bibliography.** Aleixo & Galetti (1997), dos Anjos (2001a), dos Anjos & Schuchmann (1997), dos Anjos *et al.* (1997), Bencke & Kindel (1999), Bornschein *et al.* (1998a), Cordeiro (2001), Cory & Hellmayr (1924), Ferreira de Vasconcelos (2001), Ferreira de Vasconcelos & Melo-Júnior (2001), Figueiredo & Lo (2000), Gonzaga *et al.* (1995), Meyer de Schauensee (1982), Naka *et al.* (2002), Parker & Goerck (1997), Pinto (1978), Ridgely & Tudor (1994), do Rosário (1996), Ruschi (1979), Sargeant & Wall (1996), Schönwetter (1979), Schubart *et al.* (1965), Sick (1960, 1993), Stattersfield & Capper (2000), Stotz *et al.* (1996), Teixeira & Carnevalli (1989), Venturini *et al.* (2001), Vielliard (1990a).

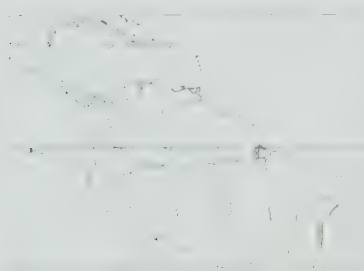
## 15. Bahia Tapaculo

### *Scytalopus psychopompus*

**French:** Mèrulaxe du Bahia **German:** Bahiatapaculo **Spanish:** Churrín de Bahía  
**Other common names:** Chestnut-sided Tapaculo

**Taxonomy.** *Scytalopus psychopompus* Teixeira & Carnevalli, 1989, near Valença, 45 m, Bahia, Brazil. Possibly only a subspecies or even a variant of *S. indigoticus*. Known from only three specimens. Monotypic.

**Distribution.** E Brazil in coastal Bahia (Ilhéus, Valença).



**Descriptive notes.** 11 cm; one male 17.5 g, one female 18 g. Adult has small whitish spot on lores; upperparts are dark blue-grey, with lower back and rump reddish-brown; white below, side of body dark blue-grey, flanks and vent uniformly chestnut-rufous, thighs slaty blue-grey; iris dark brown; upper mandible blackish, lower mandible pale grey to yellow; tarsus yellowish-brown. Differs from very similar *S. indigoticus* in having unbarred flanks and vent, plain blue (not brown and barred) thighs, and on average longer bill and wing. Juvenile plumage undescribed. **Voice.** Unknown.

**Habitat.** Thick vegetation of lowland forest in flooded areas, below 50 m.

**Food and Feeding.** Nothing known.

**Breeding.** Both members of pair collected near a nest in Oct had active gonads.

**Movements.** Probably sedentary.

**Status and Conservation.** **CRITICAL.** Possibly extinct. Restricted-range species: present in Atlantic Forest Lowlands FBA. Known from only three specimens: male collected in Jul 1944 at Ilhéus, and pair obtained in Oct 1983 at Valença. Has not been recorded since then. Destruction of coastal Atlantic forest in Bahia has been extensive, and the last small remnants of seemingly suitable habitat within the species' limited range are disappearing at an alarming rate. Survey of all remaining patches of habitat around the two localities from where the species was collected should determine whether it survives at all.

**Bibliography.** Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cordeiro (2001), Gonzaga *et al.* (1995), Krabbe & Schulenberg (1997), Ridgely & Tudor (1994), Sargeant & Wall (1996), Stattersfield & Capper (2000), Stotz *et al.* (1996), Teixeira & Carnevalli (1989), Vuilleumier *et al.* (1992), Wege & Long (1995).

## 16. Bolivian Tapaculo

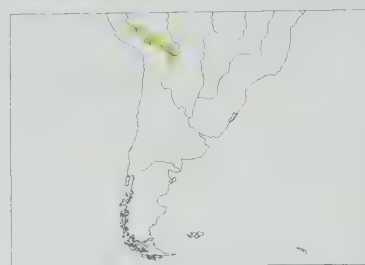
### *Scytalopus bolivianus*

**French:** Mèrulaxe de Bolivie **German:** Südlicher Weißstirntapaculo **Spanish:** Churrin Boliviano  
**Other common names:** (Southern) White-crowned Tapaculo

**Taxonomy.** *Scytalopus bolivianus* J. A. Allen, 1889, Reyes, La Paz, Bolivia.

Formerly considered a race of *S. femoralis*, but differs vocally. Monotypic.

**Distribution.** SE Peru (from N Puno, and possibly Ayacucho) SE to S Bolivia (Chuquisaca).



**Descriptive notes.** 12 cm; male 17-22 g, 1 female 19-5 g. A medium-sized, relatively short-tailed, blackish tapaculo. Male has white spot on crown variable in extent, from just a few white feathers (or none at all) to covering entire central crown; rest of plumage very dark grey, rump and wings sometimes with dark dusky brown wash, throat and upper breast slightly paler, flanks rufescent brown (paler towards crissum) and closely barred black; iris dark brown; bill black; tarsus dark brown or grey-brown. Female is paler, crown and back dark grey washed with brown, rump and wings brown, inner remiges tipped buff, tail brown,

throat and breast medium grey, feathers of lower breast tipped buff, belly and flanks dark buffy brown or medium rufescent brown, closely barred black. Juvenile similar to female. **Voice.** Song 6-15 seconds long, a trill at c. 3 kHz (first overtone), sometimes at even pitch, but usually slightly accelerating at first, then decelerating from 10-14 to 4-7 notes per second. Alarm a 4-note "kekekeke" at 3 kHz; complex high-pitched "brzk", sometimes in descending series, thought to be given by female.

**Habitat.** Dense undergrowth of humid and semi-deciduous, relatively broadleaf forest at 1000-2300 m, locally to 2850 m. Replaced at higher elevations by *S. parvirostris* in most of range; not known to meet *S. zimmeri* in S.

**Food and Feeding.** No information.

**Breeding.** No information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Generally uncommon; locally common, e.g. in Rio Grande Masicuri Closed Forest Reserve in S Santa Cruz. Occurs in Carrasco and Ambaró National Parks.

**Bibliography.** Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Fjeldså & Majer (1996), Gemuseus & Sagot (1996), Hinojosa *et al.* (1998), Krabbe & Schulenberg (1997), Remsen *et al.* (1986), Ridgely & Tudor (1994), Stotz *et al.* (1996), Whitney (1994b), Zimmer (1939).

## 17. White-crowned Tapaculo

### *Scytalopus atratus*

**French:** Mèrulaxe couronné **Spanish:** Churrín Coroniblanco  
**German:** Nördlicher Weißstirntapaculo  
**Other common names:** Northern White-crowned Tapaculo; Boyaca Tapaculo (*atratus*)

**Taxonomy.** *Scytalopus atratus* Hellmayr, 1922, Rio Negro, Boyacá, Colombia.

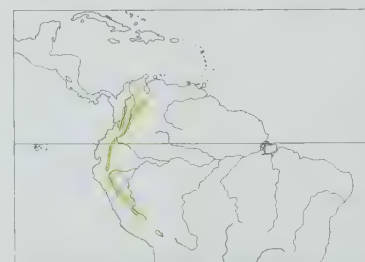
For many years considered a race of, and partly confused with, broadly sympatric *S. femoralis*. Systematics, and range of races listed, still unresolved; birds from S slope of Venezuelan Andes (Táchira and Mérida) tentatively included in *nigricans*; those from C Andes of Peru (S Amazonas to Cuzco), although included in nominate, are vocally distinct, with voice more similar to that of Venezuelan birds. Three subspecies recognized.

**Subspecies and Distribution.**

*S. a. nigricans* Phelps, Sr. & Phelps, Jr., 1953 - W Venezuela in Perijá Mts, and S slope of Andes in Táchira and Mérida.

*S. a. confusus* J. T. Zimmer, 1939 - C Andes and E slope of W Andes in Colombia.

*S. a. atratus* Hellmayr, 1922 - E Andes of Colombia and E Ecuador, and C Andes of Peru (S Amazonas to Cuzco), Cordillera Azul and Cordillera de Sira.



**Descriptive notes.** 12 cm; male 24-6-32.5 g, one female 25-3 g. Blackish tapaculo with white crown patch and dark-barred brown flanks. Male has white crown patch; otherwise, mostly blackish above, with rump reddish-brown; dark greyish-black below, sometimes contrasting pale grey patch on throat, rear flanks and vent reddish-brown with black bars, belly usually with conspicuous whitish feather tips; iris dark brown; bill blackish to black; tarsus dark brown to blackish-brown, lighter on inside. Differs from *S. micropterus* in crown pattern, less rufous on underparts, distinctly shorter tail. Female is

somewhat paler than male, often tinged brownish above, with smaller and duller crown patch, sometimes greyish-white patch on throat, more rufous on flanks. Juvenile is rusty-coloured and heavily barred and scaled throughout, with pale central forehead. Race *nigricans* is similar to nominate but even darker, bill slightly smaller, female with greyish-white chin and throat merging with grey of rest of underparts; *confusus* is paler, slaty-black above, blackest on forehead, crown patch smaller (possibly sometimes absent), lower back tinged brownish, mostly dark grey below, flanks and vent more extensively red-brown with stronger barring. **Voice.** Song in Peru (S & E of R Marañón) a single sharp 2-4-3 kHz downstroke note (first overtone; fundamental almost equally loud), repeated at pace of 4-7 per second (fastest after playback), varying between single notes and short series of 2-7 at irregular intervals, or given as continuous series for up to 30 seconds or more. Song in E Ecuador usually 1 second long, repeated at intervals of 1-3 seconds, a series of 8-10 sharp upstroke notes at 2-5-2-6 kHz (first overtone; fundamental usually audible, occasionally loudest), given at even pace of 8-11 per second, sometimes with very slight pause before final note, first and last note sometimes slightly higher-pitched than rest; after playback, series may be longer (up to 10 seconds), or faster (to 12 per second), or given at shorter intervals (to 0-3 seconds). Song in SW Venezuela (S Táchira, S Mérida) a series c. 30 seconds long of sharp downstroke notes at 2-8 kHz (first overtone; fundamental audible), given at regular pace of 3-7 per second after a few decelerating introductory notes; alarm of these birds a rapid series (0-3-0.5 seconds long) of 3-4 song-like notes at irregular intervals, sometimes interspersed with 3-4-3-8 kHz squeaks, thought to be a female vocalization.

**Habitat.** Undergrowth of humid montane forest and forest edges, at 850-1900 m. To some extent, replaced at higher elevations by *S. femoralis* in S part of range and by *S. micropterus* in N, but overlapping extensively with both; where co-occurring with latter, found more in primary and broadleaf vegetation.



**Food and Feeding.** Eight stomachs all contained insects. Forages on and near the ground.  
**Breeding.** In Ecuador, juvenile collected in Jan and adult with enlarged gonads in Nov; vocal and territorial in all months. No further data.  
**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Generally uncommon; locally fairly common, e.g. in Ecuador and Peru. Found in lowest parts of Gran Sumaco National Park and Podocarpus National Park, in Ecuador; in Peru, occurs in Yanachaga Chemillén, Biabo and Río Abiseo National Parks, also in Machu Picchu Historical Sanctuary, and probably present also in Pui Pui Protection Forest. Possibly occurs in several protected areas in Colombia.

**Bibliography.** Best *et al.* (1997), Blake (1962), Cory & Hellmayr (1924), Fjeldsá & Krabbe (1990), Hilty (2003a), Hilty & Brown (1986), Hornbuckle (1999), Krabbe & Schulenberg (1997), Meyer de Schauensee & Phelps (1978), Phelps & Phelps (1953a), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Salaman *et al.* (1999), Sharpe *et al.* (2001), Stotz *et al.* (1996), Taylor (1995), Walker (2001), Zimmer (1939).

## 18. Santa Marta Tapaculo

### *Scytalopus sanctaemartae*

**French:** Mérulaxe des Santa Marta

**Spanish:** Churrin de Santa Marta

**German:** Santa Marta-Tapaculo

**Taxonomy.** *Scytalopus femoralis sanctaemartae* Chapman, 1915, Santa Marta Mountains, Colombia.

Previously treated as a race of *S. femoralis*. Monotypic.

**Distribution.** Santa Marta Mts (N Colombia).



**Descriptive notes.** 11 cm. A fairly pale tapaculo with small white crown spot, barred brown flanks, fairly short tail and slender bill. Male has crown and back medium grey, white spot on centre of crown, sometimes brown wash on nape; rump tawny, barred black, uppertail-coverts less distinctly barred; wings grey, remiges tipped rusty and buff, tail dark brown; throat and breast grey (paler than back), centre of belly almost white or scalloped white, flanks and crissum rusty, barred black; iris dark brown; bill black or blackish; tarsus pale horn-brown to dark brown. Female usually has only trace of white crown patch, has upperparts

washed with brown, remiges more strongly brown and barred black, and is paler below. Juvenile is heavily barred and scaled, like juvenile of *S. atratus* but much less rusty, especially on throat and breast. **VOICE.** Song 14-15 seconds long, a rapid trill of upstroke and downstroke notes, pace accelerating from 14-17 per second at start to 18-22 at end, pitch over first 2 seconds rising from 3.2 to 3.6-4 kHz, then falling gradually to end at 3.2-3.4 kHz (first overtone; fundamental and sometimes second overtone almost as loud). Call a sharp squeak at 6 kHz, repeated every 2-4 seconds for minutes on end.

**Habitat.** Dark tangled ravines and undergrowth in dense humid forest, at 900-1700 m.

**Food and Feeding.** No information available. Mainly terrestrial.

**Breeding.** Juvenile collected in Jul. No other information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Little information available on relative numbers, but species is apparently not rare. Occurs in Sierra Nevada de Santa Marta National Park.

**Bibliography.** Chapman (1915a), Cory & Hellmayr (1924), Fjeldsá & Krabbe (1990), Hilty & Brown (1986), Krabbe & Schulenberg (1997), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stotz *et al.* (1996), Todd & Carriker (1922b), Wheatley (1994).

## 19. Rufous-vented Tapaculo

### *Scytalopus femoralis*

**French:** Mérulaxe à ventre roux

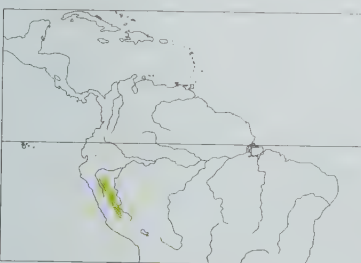
**Spanish:** Churrin Ventrirrufo

**German:** Südlicher Schieferrückentapaculo

**Taxonomy.** *Pteroptochus femoralis* Tschudi, 1844, Vitoc Valley, Junin, Peru.

Formerly included *S. boliviensis*, *S. atratus*, *S. sanctaemartae* and *S. micropterus* as races. Monotypic.

**Distribution.** C Andes of Peru, from S Amazonas to S Junin; a few specimens from as far S as Ayacucho might refer to present species.



**Descriptive notes.** 12.5 cm; male 21-28 g, female 20-24 g. A fairly large, grey tapaculo with barred brown flanks. Adult has crown and back dark grey, often with dark brown wash, rump and uppertail-coverts dark rufescent brown, tail-coverts barred black, wings dark grey, inner remiges often dark brown with black subterminal bar, tail dark grey; throat, breast and belly paler grey, flanks cinnamon-brown with fairly broad dusky bars; iris dark brown; bill blackish; tarsus pale horn-brown to dark brown. Juvenile is brown above, faintly barred black, light ochraceous buff with dusky bars below, flanks reddish cinnamon-brown to

ochraceous tawny with bars very distinct; immature darker brown above than juvenile, tail feathers blackish with narrow pale subterminal bar, scaly below with feathers showing waves of alternating adult and juvenile colour. **VOICE.** Song a single sharp downstroke note (with slight upstroke at start in N of range) repeated for minutes on end at pace of c. 2 (after playback, up to 3) per second, pitch 2.2-4 kHz (first overtone; fundamental audible).

**Habitat.** Undergrowth of humid primary and secondary forest at 1000-2050 m, mainly above 1600 m; locally to 2550 m. Replaced at lower elevations by *S. atratus*, but overlapping broadly with it; at higher levels replaced by *S. parvirostris*.

**Food and Feeding.** No information.

**Breeding.** No information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Considered to be generally common. Occurs in Yanachaga Chemillén, Biabo and Río Abiseo National Parks, and probably also in Pui Pui Protection Forest.

**Bibliography.** Bornschein *et al.* (1998a), Cory & Hellmayr (1924), Davies *et al.* (1994), Fjeldsá & Krabbe (1990), Hornbuckle (1999), Krabbe & Schulenberg (1997), Mee *et al.* (2002), Meyer de Schauensee (1982), Parker *et al.* (1982), Ridgely & Tudor (1994), Salaman *et al.* (2002), Stotz *et al.* (1996), Zimmer (1930, 1939).

## 20. Long-tailed Tapaculo

### *Scytalopus micropterus*

**French:** Mérulaxe microptère

**German:** Nördlicher Schieferrückentapaculo

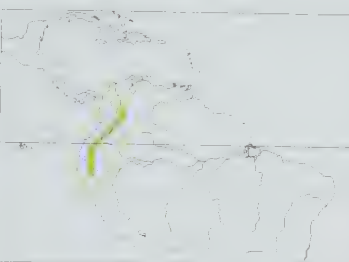
**Spanish:** Churrin Colilargo

**Other common names:** Equatorial Rufous-vented Tapaculo

**Taxonomy.** *Agathopus micropterus* P. L. Slater, 1858, Río Napo, Ecuador.

Formerly treated as a race of *S. femoralis*; the two taxa are, however, now regarded as sister-species. Monotypic.

**Distribution.** Colombia in upper Magdalena Valley, and from Cundinamarca S on Amazonian slope to extreme N Peru.



**Descriptive notes.** 13.5 cm; male 27-32.5 g.

A fairly large, dark grey tapaculo with barred brown flanks and long tail. Male is dark grey to blackish-grey above, lower back and rump dark brown with or without dark bars, tail blackish; some (younger?) birds have brown wash on nape, wing-coverts, edges of remiges and uppertail-coverts, and a black-bordered light brown subterminal bar on tertials; deep grey to dark grey below, sometimes (younger birds?) with light grey feather tips on upper belly; lower sides, flanks, lower belly and undertail-coverts tawny, distinctly barred blackish, bars on upper flanks wavy; iris dark dusky brown, somewhat lighter (dark horn-brown) on rear and inside. Female is duller than male, with slight tinge of drab brown in grey of back and anterior underparts, and sometimes more contrastingly barred flanks. Juvenile not described. **VOICE.** Usual song of 2 upstroke notes, the second slightly shorter and higher-pitched, given for up to several minutes, sometimes starting with a few single notes at irregular intervals, then becoming evenly paced series of double notes (occasionally gives longer series of single notes), interval between the 2 notes varying from 0.2 to 0.5 seconds, pace of song from 1.4 to 2.3 per second (fastest after playback), pitch of notes 2.3-2.6 kHz (first overtone; fundamental audible). Alarm of similar quality, a decelerating, rapid series of 5-6 notes repeated at 1-second intervals, much like alarm of *S. atratus* from SW Venezuela but notes slightly lower-pitched and less sharp.

**Habitat.** Inhabits humid shrubby areas at forest edge and along streams, frequently in second growth, at 1250-2300 m; 1650-1950 m in N Peru. Replaced at lower elevations by *S. atratus*, but overlapping broadly with it; in zone of overlap, found in more microphyllous vegetation. Replaced sharply at higher levels by *S. spillmanni*; in far S of range, high-level replacement is *S. parkeri*.

**Food and Feeding.** Four stomachs contained "insects", and one held "2 large grasshoppers". Forages low in vegetation and on the ground.

**Breeding.** Birds with active gonads collected in Sept and Nov; sings, and probably breeds, in all months. No other information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Generally common and fairly widespread; fairly common in Ecuador; uncommon and local in Peru. Common in several protected areas. Readily observed in region of San Rafael Falls, in Ecuador. Relatively adaptable, and tolerates considerable disturbance.

**Bibliography.** Best *et al.* (1997), Chapman (1915a), Cory & Hellmayr (1924), Hilty & Brown (1986), Krabbe & Schulenberg (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Salaman *et al.* (1999), Zimmer (1939).

## 21. Narino Tapaculo

### *Scytalopus viciniior*

**French:** Mérulaxe du Narino

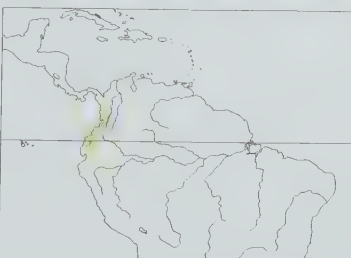
**German:** Nariñotapaculo

**Spanish:** Churrin de Nariño

**Taxonomy.** *Scytalopus panamensis viciniior* J. T. Zimmer, 1939, Ricaurte, 5000-6000 feet [c. 1500-1800 m], Nariño, Colombia.

In past, treated as a race of *S. panamensis*; populations now recognized as *S. chocoensis* were formerly included within present species. Monotypic.

**Distribution.** Pacific slope from Colombia (Risaralda) S to C Ecuador (Cotacachi).



**Descriptive notes.** 12 cm; male 20.5-24.6 g,

two females 22.9 g and 24.2 g. A medium-sized tapaculo with relatively long tail and dusky-barred brown flanks. Male has crown dark grey, nape dark brown, mantle variably dark grey or dark brown, rest of upperparts, including wing-coverts, dark brown; crown and nape (and sometimes mantle) with narrow dusky feather tips, rump and uppertail-coverts faintly barred dusky; remiges dusky with dark brown edges, tail dusky; underparts grey, upper belly often with light grey feather tips, flanks and lower belly ochraceous brown, palest and brightest on belly, flanks barred and belly feathers narrowly tipped dusky, bars on upper flanks more or less lunulate; iris dark brown; bill blackish to black; tarsus brownish-grey to blackish, paler on inside. Distinguished from *S. spillmanni* primarily by voice; individual specimens rarely separable from latter. Female resembles male, but mantle always brown with dark tips, and sometimes has lighter grey throat and more orange lower belly. Juvenile is apparently dusky-barred tawny above (moulting specimen) and tawny-olive be-

lowers narrowly tipped dusky, bars on upper flanks more or less lunulate; iris dark brown; bill blackish to black; tarsus brownish-grey to blackish, paler on inside. Distinguished from *S. spillmanni* primarily by voice; individual specimens rarely separable from latter. Female resembles male, but mantle always brown with dark tips, and sometimes has lighter grey throat and more orange lower belly. Juvenile is apparently dusky-barred tawny above (moulting specimen) and tawny-olive be-



low, with bars on flanks tawny. **Voice.** Song by male 2.5-20 seconds long (longest after playback), a series of downstroke notes decelerating from 13 to 7 per second and increasing in volume, first few notes a bit slower and sometimes higher-pitched (3-2 kHz; first overtone: fundamental barely audible) than following (2-8 kHz). Male call a 3.5 kHz downstroke, "ki", repeated at intervals of 6-7 seconds. Female gives a 5-second series of c. 10 notes at 3-3 kHz, and descending series 10-15 seconds long of c. 9 high-pitched, explosive notes. Scold by both sexes "kekikikiki", 3-7 notes at 2-8 kHz, first note slightly higher-pitched.

**Habitat.** Undergrowth of humid forest, occasionally forest borders, at 1250-2000 m, locally to 2350 m. Replaced sharply at higher elevations by *S. spillmanni*. At lower levels replaced by *S. chocoensis*, but with no known areas of contact.

**Food and Feeding.** Food items on average larger than those of most other *Scytalopus*. Contents of 14 stomachs were mostly insects, including tiny flying insects, 2 grasshoppers (Acrididae; 1 small, 1 large), beetles, including a scarabid 2 cm long and a beetle larva; also arthropods, including a millipede (Diplopoda), and unidentified larvae. Forages primarily on the ground, but also low in undergrowth.

**Breeding.** Female with brood patch collected in Jan, birds with active gonads in Nov, Dec and Apr, and a juvenile in Nov. No other information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Common to fairly common; fair-sized population exists at various localities on slopes above Mindo, in N Ecuador. Occurs in 3 protected areas in Ecuador: Mindo-Nambillo Cloudforest Reserve, Cotacachi-Cayapas Ecological Reserve, and Cerro Golondrina Reserve. In Colombia, present in La Planada Nature Reserve and Farallones de Cali National Park, and presumably occurs in several other protected areas.

**Bibliography.** Allen (1998), Best *et al.* (1997), Fjeldså & Krabbe (1990), Hilty & Brown (1986), Kirwan & Marlow (1996), Krabbe (1992b), Krabbe & Schulenberg (1997), Pearman (1993b, 1994c), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Salaman (1994), Stotz *et al.* (1996), Taylor (1995).

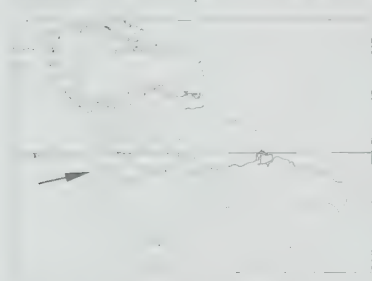
## 22. Ecuadorian Tapaculo

### *Scytalopus robbinsi*

**French:** Mèrulaxe de Robbins **German:** Robbinstapaculomm **Spanish:** Churrín de El Oro  
**Other common names:** El Oro Tapaculo

**Taxonomy.** *Scytalopus robbinsi* Krabbe and Schulenberg, 1997, 9.5 km west of Piñas, 870 m, El Oro, Ecuador. Monotypic.

**Distribution.** Pacific slope in SW Ecuador (Azuay and El Oro).



**Descriptive notes.** 11 cm; male 18.1-21 g, female 18.7-19.5 g. A fairly small tapaculo with relatively heavy bill and dark-barred brown flanks. Male is mostly dark grey above, feathers tipped blackish; nape, lower back, uppertail-coverts, rump (sometimes) and inner remiges (usually) dark brown, or rump dark-barred cinnamon-brown; tail blackish; grey below, belly sometimes with broad but indistinct silvery feather tips, lower sides, flanks, extreme lower belly and undertail-coverts cinnamon-brown, barred blackish; iris dark brown; bill blackish; tarsus brown to dark brown on front and outside, somewhat lighter

behind and on inside. Female has brown of nape reaching to upper mantle, brown wing-coverts with black subterminal dot or bar, tertials with buff spot at tip of outer web, throat somewhat lighter, upper belly sometimes with distinct whitish tips, entire lower belly cinnamon-brown with blackish bars (or bars only on lower parts); bare parts as male, but 1 individual had front and inner parts of tarsus paler brown than rear and outer. Juvenile not described. **Voice.** Male song a minute-long series of a resonant double note at pace of 4.4-5.3 per second, first note a down-upstroke at 2.7-3 kHz, second an up-downstroke at 2.6-2.8 kHz (first overtone: fundamental audible). Female call a single, rising "quick" at 1.4 kHz with several loud overtones; female also gives a series 15-20 seconds long of 10-20 falling notes, gradually descending from 5.7 to 3.6 kHz (second overtone; first overtone audible).

**Habitat.** Undergrowth of wet forest, at 700-1250 m. Not known to overlap with *S. latrans*, which occurs at higher levels on same slope.

**Food and Feeding.** Four stomachs contained insects, one held small insects, and one contained beetles 3-4 mm long. Forages on and near the ground.

**Breeding.** Unknown. Song activity noted as strong in Sept and Feb, low in Dec and Apr; only females vocalized in Nov.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon and local; possibly fairly common in some localities. Recorded from region of Molleturo along the Cuenca road (Azuay), and from Buenaventura (El Oro). Owing to widespread habitat fragmentation and deforestation within its small range, this species should probably be regarded as Near-threatened. Little of its range enjoys any form of protection; indeed, far from sufficient habitat is protected to ensure the survival of this tapaculo or that of the El Oro Parakeet (*Pyrrhura orcesi*), which has a similar distribution.

**Bibliography.** Krabbe & Schulenberg (1997), Ridgely & Greenfield (2001), Ridgely *et al.* (1998), Robbins & Ridgely (1990), Rodner *et al.* (2000), Taylor (1995).

## 23. Choco Tapaculo

### *Scytalopus chocoensis*

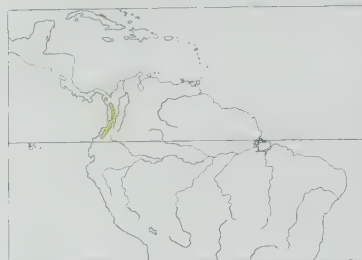
**French:** Mèrulaxe du Choco **German:** Chocotapaculo **Spanish:** Churrín del Chocó

**Taxonomy.** *Scytalopus chocoensis* Krabbe and Schulenberg, 1997, El Placer, 670 m, Esmeraldas, Ecuador.

Formerly included within *S. viciniar*. Monotypic.

**Distribution.** Pacific slope in E Panama (Cerro Pirre) and from W Colombia S to NW Ecuador (R Guayllabamba).

**Descriptive notes.** 11 cm; male 19-22.5 g, female 17-20.1 g. A fairly small tapaculo with relatively heavy bill and dark-barred brown flanks. Male has upperparts dark grey, crown and mantle with



grading to grey of breast, lower belly sometimes with some bright ochraceous. Juvenile is drab brown above (paler on primary coverts) with narrow dark tips, rump and uppertail-coverts as adult; appears barred below, feathers of chin and throat basally light grey, those of breast and belly blackish, all with paler subterminal band and narrow blackish tip, flanks and undertail-coverts as adult. **Voice.** Male song a very resonant series 5-60 seconds long of similar up-downstrokes at 3 kHz (first overtone; fundamental audible), pace 2.6-3.6 per second, first few notes often slightly lower-pitched and delivered at faster rate. Call by both sexes a series 0.4-1 second long of 3-8 short, sharp notes at 2.5 kHz (first overtone; fundamental audible); female may give sharp, explosive, buzzy "brzk" at 5 kHz.

**Habitat.** Inhabits dense undergrowth of wet, mainly primary forest, occasionally forest borders, at 250-1250 m; 1340-1465 m in Panama. Replaced at higher elevations by *S. viciniar*, with no known areas of contact; in extreme N of range, replaced on Cerro Tacarcuna massif by *S. panamensis*.

**Food and Feeding.** Eight stomachs all held unidentified small insects, and one contained beetle larvae. Terrestrial.

**Breeding.** Female with active gonads in Feb; juveniles collected from two nests in Aug. One nest, hidden amongst leaf litter on steep slope, was spherical ball of rootlets interwoven with moss, external diameter 12 cm, internal diameter c. 8.5 cm, entrance hole 4 cm in diameter; male and female both visited nest to feed the two nestlings.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Fairly common. Known to occur in Cotacachi-Cayapas Ecological Reserve, in Ecuador; probably occurs in Farallones de Cali National Park and other protected areas in Colombia.

**Bibliography.** Anon. (1998a), Christian (2001), Krabbe & Schulenberg (1997), Ridgely & Greenfield (2001), Ridgely *et al.* (1998), Robbins *et al.* (1985), Rodner *et al.* (2000), Strewé (2000a), Wheatley & Brewer (2001).

## 24. Pale-throated Tapaculo

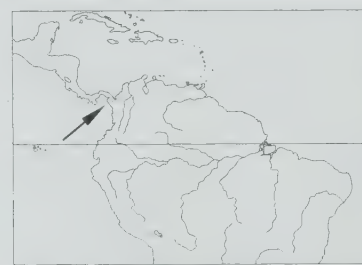
### *Scytalopus panamensis*

**French:** Mèrulaxe du Panama **German:** Tacarcunatapaculo **Spanish:** Churrín Panameño  
**Other common names:** Tacarcuna/Panama Tapaculo

**Taxonomy.** *Scytalopus panamensis* Chapman, 1915, Mount Tacarcuna, 3600 feet [c. 1100 m], east Panama.

Formerly included *S. viciniar* as a race. Monotypic.

**Distribution.** Cerro Tacarcuna massif, on Panama-Colombia border.



**Descriptive notes.** 11 cm. Male has clearly defined whitish supercilium extending to rear edge of crown; otherwise, upperparts generally dark grey, crown blacker, lower back, rump and uppertail-coverts rufescent brown, closely barred black, wings and tail dusky brown; throat and breast paler grey, belly somewhat mottled with lighter grey, flanks and crissum black-barred tawny; iris dark brown; bill black; tarsus dark brown. Female is similar, but browner above. Juvenile not described. **Voice.** Alarm call 0.6-0.8 seconds long, repeated up to 15 times at intervals of 1.5-2.5 seconds, a strident series of 5-6 up-downstroke notes at 4

kHz (first overtone; fundamental audible), occasionally with extra note added after a short pause. **Habitat.** Undergrowth of humid montane forest and forest borders, at 1050-1500 m. Replaced on adjacent peaks by *S. chocoensis*.

**Food and Feeding.** Diet not recorded. Usually in pairs, foraging low in undergrowth and on the ground.

**Breeding.** Nothing known.

**Movements.** Probably sedentary.

**Status and Conservation.** **VULNERABLE.** Restricted-range species: present in Darién Highlands EBA. Common within its very restricted range, which consists of two adjacent mountains and covers no more than 100 km<sup>2</sup>. Total population estimated at c. 10,000 individuals. Occurs in Darién National Park, in Panama, and partly protected nominally by the adjacent Los Katíos National Park, in NW Colombia. Despite formal protection, however, forest habitat in this region has been destroyed by mining and agricultural activities; although clearance may not yet have reached the altitudinal levels occupied by this species, it remains a serious threat. Additionally, the planned completion of the Pan-American Highway would considerably accelerate forest clearance in the region, resulting in irreversible damage to habitat. Proposed conservation measures include extensive survey work aimed at establishing this species' presence or otherwise throughout the Tacarcuna massif; extending of boundaries of Los Katíos National Park; and the setting-up of conservation management schemes to control detrimental human activities and benefit wildlife.

**Bibliography.** Anon. (1998a), Chapman (1915a), Cory & Hellmayr (1924), Hilty & Brown (1986), Krabbe & Schulenberg (1997), Meyer de Schauensee (1982), Pearman (1993b), Ridgely & Gwynne (1989), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield & Capper (2000), Stotz *et al.* (1996), Wege (1996), Wetmore (1972).

## 25. Silvery-fronted Tapaculo

### *Scytalopus argentifrons*

**French:** Mèrulaxe argenté **German:** Silberbrauentapaculo **Spanish:** Churrín Plateado



**Other common names:** Chiriqui Tapaculo (*chiriquensis*)

**Taxonomy.** *Scytalopus argentifrons* Ridgway, 1891, Volcán de Irazú, Costa Rica. Race *chiriquensis* has sometimes been treated as separate species, but appears not to differ vocally. Two subspecies recognized.

**Subspecies and Distribution.**

*S. a. argentifrons* Ridgway, 1891 - Costa Rica and W Panama (Volcán de Chiriquí).

*S. a. chiriquensis* Griseom, 1924 - W Panamá in E Chiriquí and E Veraguas.



**Descriptive notes.** 11 cm; 17 g. A fairly small tapaculo with dusky-barred brown flanks and silvery forehead and brow. Male has forehead and short supercilium silvery grey; otherwise, mostly sooty black, paler on lower breast and belly, wings and tail brownish-black, tertials sometimes barred tawny-rufous, flanks and crissum dark tawny-rufous, barred dusky; iris dark brown; bill black; tarsus dark grey-brown. Female is similar, but lacks supercilium, and has dark rich brown upperparts scaled with black, feathers of back with dusky centres, face, throat and breast dark sooty grey, washed with olive-brown, blackish belly broadly edged

tawny-buff, tawny ground colour of flanks and crissum more extensive and brighter than on male. Juvenile resembles female, but feathers of throat dull greyish-buff to tawny with blackish centres, rest of underparts sooty black, heavily scaled with buff-brown. Race *chiriquensis* is slightly larger than nominate, darker overall, with forehead darker and supercilium less well marked. **Voice.** Song 5-10 seconds long, a series of similar notes at 4-4.5 kHz (first overtone; fundamental audible), gradually increasing in volume, pace decreasing from 16-17 to 4-7 notes per second. Alarm call similar in quality, series 0.5 seconds long of 5 notes repeated at intervals of 2-3 seconds, much like call of *S. panamensis* but notes sharper.

**Habitat.** Undergrowth of humid forest and adjacent second growth, especially thickets and bamboo tangles along streams and ravines. Occurs at 1000-3000 m, reaching its lowest elevations on the Caribbean slope.

**Food and Feeding.** Larvae, pupae and adult insects, including beetles, earwigs (Dermaptera), crickets (Gryllidae); also spiders and their egg cases, and woodlice (Isopoda). Hops and creeps about, often on the ground, peering into all sorts of nooks and crannies.

**Breeding.** Nothing recorded.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species; present in Costa Rica and Panama Highlands EBA. Generally appears to be fairly common. Known to occur in several protected areas.

**Bibliography.** Anon. (1998a), Blake, E.R. (1958), Blake, J.G. & Loiseleur (2000), Chapman (1915a), Cory & Hellmayr (1924), Hernández *et al.* (1995), Ridgely & Gwynne (1989), Ridgway (1911), Slud (1964), Stiles (1985), Stiles & Skutch (1989), Stotz *et al.* (1996), Wetmore (1972), Young *et al.* (1998).

## 26. Caracas Tapaculo

### *Scytalopus caracae*

**French:** Mèrulaxe de Caracas

**German:** Caracastapaculo

**Spanish:** Churrin de Caracas

**Other common names:** Venezuelan Tapaculo

**Taxonomy.** *Scytalopus latebricola caracae* Hellmayr, 1922, Galipán, Cerro de Ávila, Venezuela. Previously considered conspecific with *S. latebricola*, but has different song. Monotypic.

**Distribution.** Coastal mountains of Venezuela from Aragua to Miranda and in W Sucre (Cerro Turumiquire).



**Descriptive notes.** 11.5 cm; c. 24 g. A medium-sized grey tapaculo with dark-barred brown flanks. Adult has dark grey upperparts sometimes washed dark brown, dusky brown wings, inner remiges more or less tipped dark tawny-brown, dark tawny-brown rump and uppertail-coverts, dusky brown tail; throat and breast paler grey, centre of belly buff, flanks and crissum tawny-brown with indistinct dusky barring; no data on bare parts. Juvenile not described. **Voice.** Song 0.7-0.8 seconds long, given at intervals of 0.6-1 second, a series of 5-6 up-downstroke notes, volume and pitch first increasing and then decreasing,

pitch from 1.9-2 to 3.2 to 2.4-2.7 kHz (first overtone; fundamental audible), much like alarm of many other *Scytalopus* species. Scold a wheezy series 0.7-0.8 seconds long of 7-8 notes at 5-6 kHz, repeated at irregular intervals; also "brzk" call, uttered frequently by male, as well as female.

**Habitat.** Undergrowth of humid forest, edge, and secondary woodland; tends not to frequent *Chusquea* bamboo. At 1200-1800 m.

**Food and Feeding.** No information.

**Breeding.** No information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Fairly common to common, e.g. easily observed around Colonia Tovar. Probably occurs in Henri Pittier, Macarao and El Ávila National Parks.

**Bibliography.** Cory & Hellmayr (1924), Hilty (2003a), Krabbe & Schulenberg (1997), Meyer de Schauensee & Phelps (1978), Ridgely & Tudor (1994), Rodner *et al.* (2000), Schäfer (2002), Stotz *et al.* (1996).

## 27. Merida Tapaculo

### *Scytalopus meridanus*

**French:** Mèrulaxe de Mérida

**German:** Méridatapaculo

**Spanish:** Churrin de Mérida

**Taxonomy.** *Scytalopus latebricola meridanus* Hellmayr, 1922, Culatá, 4000 m, Andes of Mérida, Venezuela.

Previously considered conspecific with *S. latebricola*, but differs vocally. Research required on relationship with *S. fuscicauda*, which may be conspecific, or even a synonym of present species. Affinities of birds in adjacent Colombia uncertain: those from Páramo de Tamá may belong to present species or to race *infasciatus* of *S. griseicollis*, to which records from E Andes presumed also to pertain; further, specimens from C Andes previously attributed to present species, are as yet not safely referable to any taxon, but some may represent *S. spillmanni* and others perhaps an as yet undescribed species. Monotypic.

**Distribution.** Andes of Venezuela in Mérida and Táchira.



**Descriptive notes.** 11.5 cm. A medium-sized grey tapaculo with unbarred or indistinctly dark-barred brown flanks. Male has dark grey upperparts washed dark brown, brown rump and uppertail-coverts, dusky brown wings, grey tail; throat and breast paler grey, belly grey but typically with silvery sheen, flanks and crissum tawny-brown with, at most, rather indistinct dusky bars; iris dark; bill blackish; tarsus brownish. Differs from very similar *S. latebricola* in slightly smaller size, paler plumage, silvery sheen on belly, much smaller bill that is not elevated basally; from *S. griseicollis* in slightly darker rufous flanks

with a few bars, slightly darker belly. Female is slightly paler overall than male, more strongly washed with brown above, with tawny colour of flanks brighter. Juvenile is brown above, light brown below, crown, back and throat with narrow dark feather tips, rump and entire underparts with broader dark bars, upper flanks appearing sealed. **Voice.** Song c. 10 seconds long, beginning with a few spaced descending notes, then becoming rapid trill of 17-22 (rarely, 7-14) upstrokes or up-downstroke notes per second, first at 2.8 kHz, rising over a few seconds to level at 3.2-3.9 kHz (first overtone; fundamental audible, sometimes barely so); trill sometimes has slight pause after each group of 2-4 notes. Scold 1-2 seconds long, an abrupt, rapid (22 per second) series at irregular intervals of 2-5 seconds, either at constant pitch with each note (first overtone) ranging from 3.5 to 5 kHz, or, after slightly lower-pitched introductory note, gradually falling c. 0.2 kHz; other calls include piercing "weedeet" of 2 similar notes at 5.5-6 kHz, and rising "caweet" of 2 notes at 3.5 and 4 kHz.

**Habitat.** Undergrowth of humid forest and humid shrubbery at edge, not showing preference for *Chusquea* bamboo. Occurs at 1800-4000 m.

**Food and Feeding.** No information.

**Breeding.** No information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Common and widespread. Common in Páramos del Batallón y La Negra, Sierra de la Culata, and Sierra Nevada National Parks; very likely to occur in several other protected areas.

**Bibliography.** Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hilty (2003a), Krabbe & Schulenberg (1997), Meyer de Schauensee & Phelps (1978), Pfeifer *et al.* (2001), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stotz *et al.* (1996).

## 28. Brown-rumped Tapaculo

### *Scytalopus latebricola*

**French:** Mèrulaxe à croupion brun

**Spanish:** Churrin Ratona

**German:** Kolumbianischer Rostflankentapaculo

**Taxonomy.** *Scytalopus latebricola* Bangs, 1899, Páramo de Chiriqua, 12,000 feet [c. 3660 m], Sierra Nevada de Santa Marta, Colombia.

Formerly included *S. caracae*, *S. meridanus* and *S. spillmanni* as races; race *infasciatus* of *S. griseicollis* has also sometimes been treated as conspecific with present species. Monotypic.

**Distribution.** Santa Marta Mts (N Colombia).



**Descriptive notes.** 11.5 cm. A medium-sized grey tapaculo commonly with dusky-barred brown flanks; bill elevated basally and compressed laterally. Adult is dark brownish-grey above, more or less washed with dark brown on back, with rump and uppertail-coverts tawny-brown, wings and tail dusky brown; throat, breast and belly paler brownish-grey, flanks and lower belly relatively bright rufous-chestnut and either plain or narrowly barred blackish; iris brown; bill black, base of lower mandible dusky flesh-coloured; tarsus light to dark brown, sometimes mottled with brownish-flesh. Juvenile is brown, each

feather with black centre, giving squamate or barred appearance. **Voice.** Song 7 seconds long, a few introductory notes followed by rapid trill at 4.3 kHz (first overtone; fundamental audible) and pace 24 notes per second. Scold much like that of *S. meridanus*, 0.7-0.8 seconds long, at irregular intervals of 0.5-3 seconds, a rapid series of notes (20 per second) falling from 6 to 5.6 kHz (first overtone; fundamental almost equally loud), usually after 1 or a few slightly lower-pitched introductory notes, or similar but pitched at c. 4 kHz with almost equally loud fundamental and second overtone; call a nasal, high-pitched "szeow" at intervals of 3-4 seconds, up to 15 times or more.

**Habitat.** Dense undergrowth and thickets in humid forest and tall secondary woodland, at 2000-3660 m.

**Food and Feeding.** Details of diet not documented; presumably feeds on arthropods. Mainly terrestrial; creeps low in undergrowth and leaf litter. Occasionally climbs mossy trunks with tangled vines, to 1.5 m up.

**Breeding.** Adults with extremely worn plumage collected in Jul, suggesting breeding in Jun, but immatures moulting to adult plumage have been collected in Mar. No other information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Fairly common within its small range. Occurs in Sierra Nevada de Santa Marta National Park.

**Bibliography.** Chapman (1915a), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hilty & Brown (1986), Krabbe & Schulenberg (1997), Meyer de Schauensee (1982), Pearman (1993b), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stotz *et al.* (1996), Todd & Carriker (1922b).



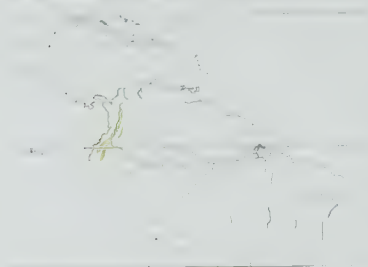
## 29. Spillmann's Tapaculo

*Scytalopus spillmanni*

French: Mèrulaxe de Spillmann

Spanish: Churrin de Spillmann

German: Ecuador-Rostflankentapaculo

**Taxonomy.** *Scytalopus latebricola spillmanni* Stresemann, 1937. Volcán Iliniza, Ecuador.Forms a superspecies with *S. parkeri*. Formerly considered a race of *S. latebricola*. Monotypic.**Distribution.** C Andes of Colombia S to Ecuador (in W to Cotopaxi, in E to right bank of R Paute).**Descriptive notes.** 12 cm; male 21-30 g, female 20-29.5 g. A medium-sized tapaculo with dark-barred brown flanks. Male is blackish-grey above, feathers narrowly and indistinctly tipped dusky, rump and uppertail-coverts dark brown; dark brown wash on edges of inner remiges, lower back, and often on edges of tail and on nape; grey below, belly sometimes with silvery feather tips, lowest part of belly pinkish-buff, flanks and undertail-coverts ochraceous tawny to cinnamon-brown, barred dusky; iris dark brown; bill blackish to black; tarsus dark brown, dark grey-brown or blackish, somewhat lighter on inside. Distinguishedfrom *S. vicinior* primarily by voice; individual specimens rarely separable. Female is occasionally like male, but more often heavily washed with brown above (rendering dusky tips more conspicuous), with lower belly extensively orange, barred flanks also lighter, recalling *S. parkeri*. Juvenile has brown upperparts barred dusky, dusky tail edged brown, variable below, dusky with buff bars (bars wider than on juvenile *S. parkeri*), throat sometimes nearly uniform light buff, bars on belly sometimes whitish. **Voice.** Male song 10-20 seconds long (rarely longer), a trill at 4 kHz (first overtone), usually with 1 or 2 slightly higher introductory notes, pace 25-35 downstroke notes per second, volume increasing at beginning, pitch often rising slightly towards end; male also gives series (0.5-1 second long) of notes at 2-second intervals, pace 26-30 per second, pitch distinctly rising from 2.8 to 3.4 kHz (first overtone). Scold c. 1 second long, 11-15 notes at 3-6 kHz, first and last 2 lower-pitched. Female's advertising call a slow, gradually descending series of squeaky, high-pitched notes, usually triggering song from 1 or more males; female, sometimes as introduction to descending series, gives very explosive, high-pitched "brzk" with several audible harmonics.**Habitat.** Inhabits humid forest undergrowth, especially with *Chusquea* bamboo, mostly at 1900-3200 m, but locally up to 3500 m; to 3700 m in Ecuador (W Napo). Replaced sharply at higher elevations by *S. canus*; at lower levels replaced by *S. micropterus* on Amazonian slope and by *S. vicinior* on Pacific slope. Exact location of boundary between present species and *S. parkeri* in S not known.**Food and Feeding.** 29 stomachs held small beetles and other small or tiny insects; stomach of one juvenile contained a fairly large spider. Forages low in undergrowth and on the ground.**Breeding.** Specimens with active gonads indicate probable breeding throughout year; two juveniles collected in Jan in Ecuador (Napo). No other information.**Movements.** Probably sedentary.**Status and Conservation.** Not globally threatened. Common and widespread; fairly common in Ecuador. Occurs in several national parks and ecological reserves.**Bibliography.** Best *et al.* (1997), Jelds & Krabbe (1990), Hilty & Brown (1986), Krabbe & Schulenberg (1997), Renjillo (2001), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Stotz *et al.* (1996), Welford (2000), Zimmer (1939).

## 30. Chusquea Tapaculo

*Scytalopus parkeri*

French: Mèrulaxe de Parker

German: Bambustapaculo

Spanish: Churrin de Chusquea

**Taxonomy.** *Scytalopus parkeri* Krabbe and Schulenberg, 1997, c. 20 km SSW of San Lucas, 2770 m, Loja, Ecuador.Forms a superspecies with *S. spillmanni*. Monotypic.**Distribution.** S Ecuador (E Loja, Zamora-Chinchipec) and extreme N Peru (E Piura, N Cajamarca).**Descriptive notes.** 11.5 cm; male 21-24.4 g, female 18.8-23 g. A medium-sized tapaculo with dark-barred brown flanks. Adult has crown, back and most of wings dull grey, feathers usually with indistinct narrow dusky tips; rest of upperparts, including inner remiges, brown, rump sometimes brighter, uppertail-coverts usually barred dusky; underparts grey, belly sometimes with silvery feather tips, lower belly ochraceous buff; flanks and undertail-coverts ochraceous tawny to cinnamon-brown, more or less barred blackish, sometimes (older birds?) virtually unbarred; iris dark brown; bill blackish; tarsus dull brown, grey-brown, dark brownor blackish-brown, lightest on inside. Juvenile is dusky-barred brown above, wing-coverts, tertials and some back feathers with narrow blackish-bordered buff subterminal bars, tail faintly barred dusky at tip, dusky underparts narrowly barred pinkish-buff, bars on flanks somewhat broader and ochraceous brown; immature resembles silvery-bellied adult, but rump faintly barred, lower sides distinctly barred, wing-coverts and edges of remiges washed brown, inner remiges with black-bordered buff subterminal bar. **Voice.** Male song 1-9 seconds long, repeated at intervals of 1-8 seconds, an initially descending series of down-upstroke notes at pace of 10-12 per second, pitch 3.4-3.6 kHz (first overtone). In duet, male sustains an even series of 2.8 kHz notes at 19 per second, while female gives a long, slowly descending series at 2 per second with first 2 or 3 notes explosive and high-pitched (up to 7 kHz) and following ones falling from 5 to 4 kHz. Call c. 1 second long, repeated every 4-7 seconds, much like song but sharper, and of only 9-12 notes.**Habitat.** Inhabits dense stands of *Chusquea* bamboo and adjacent humid forest undergrowth, at 2250-3350 m; up to 2900 m in N Peru. Replaced in low scrub at higher elevations by *S. canus*; on Amazonian slope, replaced at lower levels by nominate race of *S. latrans* in more open and disturbed undergrowth, by *S. micropterus* in dense and humid undergrowth; on inter-Andean slopes, replaced below by race *subcinereus* of *S. latrans* in drier and more open undergrowth and scrub. Exact location of boundary between present species and *S. spillmanni* in N not known.**Food and Feeding.** 17 stomachs held insects, one also a berry; items in three other stomachs included beetles, other insects, and plant material. Forages on the ground and within 2 m of it, especially in tangles of dead stalks and foliage of bamboo.**Breeding.** Probably breeds in all months, except during exceptionally long dry periods; 1 juvenile collected in Dec and 1 in Feb, female with brood patch in Jun, and birds with active gonads in Sept, Nov, Mar and Jun.**Movements.** Probably sedentary.**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common in Ecuador; uncommon in Peru. Numerous in Podocarpus National Park and in Tapichalaca Biological Reserve, in Ecuador.**Bibliography.** Krabbe & Schulenberg (1997), Ridgely & Greenfield (2001), Ridgely *et al.* (1998), Rodner *et al.* (2000), Taylor (1995).











### 31. Trilling Tapaculo

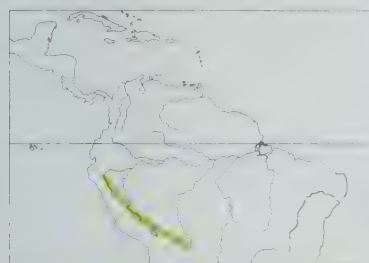
#### *Scytalopus parvirostris*

**French:** Mèrulaxe à petit bec **German:** Trillertapaculo **Spanish:** Churrin Trinador

**Taxonomy.** *Scytalopus unicolor parvirostris* J. T. Zimmer, 1939, Río Aceramarca, 10,800 feet [c. 3250 m], Bolivia.

Formerly treated as a race of *S. unicolor*, but vocalizations differ. Some geographical variation in song suggests possible subspecific differences; further study required. Monotypic.

**Distribution.** NW Peru (Amazonas S & E of R Marañón) S to EC Bolivia (Santa Cruz).



**Descriptive notes.** 10.5 cm; male 17.5–21 g, female 15.4–18 g. A fairly small grey tapaculo. Adult is sometimes uniform dark grey; more often dark grey above, below slightly paler, grey to light grey (pale individuals often with throat palest), with dark rufescent-brown flanks and crissum more or less obscurely barred with dusky; frequently (younger individuals?) has a certain amount of brownish on wings and tail, with some barring, and silvery sheen of pallid grey feather tips medially below, especially on belly; iris brown; bill black; tarsus dusky brown. Generally distinguished from *S. acutirostris* by brighter flanks, but individual specimens rarely

safely separable by morphological features alone, and can be virtually identical; however, the two have strikingly different vocalizations. Female is slightly paler than male, and usually washed with dark brown, especially on wings, rump, tail and flanks, these parts also more or less barred with dusky. Immature resembles female, or has remains of juvenile plumage, either as scattered feathers or as ochraceous spots, crescents, bars or edges, appearing scaled below. **Voice.** Song a rapid trill 10–15 seconds long (after playback, up to minutes long), pace varying geographically, in Peru 21 notes per second in Pasco but 14 in Cuzco (W of R Urubamba), and 20–28 in Bolivia. Scold like song but shorter, phrases 1–4 seconds long, given at intervals of 2–9 seconds; also single “kick”.

**Habitat.** Undergrowth of humid montane forest. Present at 1800–2500 m in C Peru, where replaced at lower levels by *S. femoralis* and at higher levels by *S. acutirostris*; at 2000–3200 m, locally up to 3300 m, in Bolivia, where replaced below by *S. bolivianus* and above by *S. schulenbergi*.

**Food and Feeding.** No information on diet. Forages alone or in pairs. Creeps around in densest undergrowth, feeding mostly on the ground.

**Breeding.** Juvenile collected in Jul. No other information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Fairly common to uncommon. Occurs in several protected areas, e.g. in Machu Picchu Historical Sanctuary, in Peru; present along the Inca Trail between Wiñay Wayna and Machu Picchu, and also at the lower part of Abra Málaga.

**Bibliography.** Coopmans *et al.* (2001), Ejeldsá & Krabbe (1990), Gemuseus & Sagot (1996), Hornbuckle (1999), Krabbe & Schulenberg (1997), Ridgely & Tudor (1994), Stotz *et al.* (1996), Walker (2001), Whitney (1994b), Zimmer (1939).

### 32. Tschudi's Tapaculo

#### *Scytalopus acutirostris*

**French:** Mèrulaxe de Tschudi **German:** Grautapaculo **Spanish:** Churrin de Tschudi  
**Other common names:** Sharp-billed Tapaculo

**Taxonomy.** *Pterotochus acutirostris* Tschudi, 1844, Maraynioc, Junin, Peru.

Formerly treated as a race of *S. magellanicus*. Monotypic.

**Distribution.** C Andes of Peru from E La Libertad S to Junin.



**Descriptive notes.** 10.5 cm; male 17–20 g, female 16.5–19 g. A fairly small tapaculo. Adult is dark grey above, paler grey below, flanks with only slight wash of brownish and at most only traces of barring; iris brown; bill black; tarsus dusky brown. Generally differs from *S. parvirostris* in having, on average, shorter tail, darker and more uniform plumage, and no silvery sheen on belly, but individual specimens rarely safely separable solely by morphological features, and can be virtually identical; vocalizations, however, markedly different. Female is paler grey overall, rump washed with brown, wings dark dusky brown, inner remiges

with subterminal black (and sometimes tawny) bars, flanks and crissum black-barred tawny-brown. Juvenile is barred and spotted. **Voice.** Song 0.5 seconds long, repeated 4–10 or more times at intervals of 1–1.5 seconds, a slightly fading trill of 6–9 downstroke notes at c. 3 kHz (first overtone) introduced by 1–2 louder, sometimes higher-pitched up-downstroke or downstroke notes. Call 1–2 seconds long, repeated at intervals of 3–4 seconds, a monotonous series of 3–7 downstroke notes at c. 3 kHz. A slowly falling and slowing series is probably a female vocalization.

**Habitat.** Undergrowth of humid cloudforest, only rarely in bamboo, at 2675–3500 m. Found at higher elevations than *S. parvirostris* where the two co-occur.

**Food and Feeding.** Four stomachs held insects, and one contained insects and 2 seeds.

**Breeding.** Juvenile collected in Aug. No further information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Considered to be fairly common overall. Occurs in Río Abiseo National Park.

**Bibliography.** Coopmans *et al.* (2001), Cory & Hellmayr (1924), Krabbe & Schulenberg (1997), Ridgely & Tudor (1994), Stotz *et al.* (1996), Whitney (1994b), Zimmer (1930, 1939).

### 33. Unicoloured Tapaculo

#### *Scytalopus unicolor*

**French:** Mèrulaxe unicolore **German:** Hellgrauer Tapaculo **Spanish:** Churrin Unicolor

**Taxonomy.** *Scytalopus unicolor* Salvin, 1895, Cajabamba, 9000 feet [c. 2750 m], and Huamachuco, 10,400 feet [c. 3200 m], Peru.

Formerly included *S. latrans* and *S. parvirostris* as races, but vocalizations differ; vocally most similar to *S. acutirostris*. Monotypic.

**Distribution.** E slope of W Andes of Peru in S Cajamarca and La Libertad.



**Descriptive notes.** 10.5 cm. A fairly small, grey tapaculo. Male is grey to deep grey above, pale to light grey below; rump, flanks and vent sometimes with slight wash of light brownish, wings and tail sometimes with traces of barring; most (especially younger birds) have silvery sheen on centre of underparts, especially belly, and faintly dark-barred brownish tinge on flanks. Female resembles male, but possibly more often with brown wash. Immature is brown above, head feathers inconspicuously tipped dusky, back scaled blackish and ochraceous, tail barred black and ochraceous subterminally; below, dull ochraceous with greyish tinge, throat feathers with fine dusky tips, breast and belly scaled with stronger dark tips and pre-subterminal spots or crescents, flanks barred ochraceous brown and dusky.

**Voice.** Song of 4–6 notes, first overtone loudest, c. 2.4 kHz, fundamental and higher overtones barely audible, each note becoming shorter and pace increasing through the phrase, which lasts 0.3–0.5 seconds and is repeated at 1-second intervals. Call a single up-downstroke note at 2.5–3 kHz.

**Habitat.** Dense shrubbery in humid montane forest, at 2000–3170 m.

**Food and Feeding.** No information.

**Breeding.** No information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Fairly common within its very small range. Appears to be tolerant of disturbance. Habitat of dense shrubbery is, however, uncommon and strongly fragmented, under constant human pressure, and seriously at risk from fires; in addition, no protected areas exist within its tiny range. This species probably merits the conservation status of Near-threatened, or even that of Vulnerable.

**Bibliography.** Coopmans *et al.* (2001), Cory & Hellmayr (1924), Davies *et al.* (1994), Ejeldsá & Krabbe (1990), Koepecke (1961a), Krabbe & Schulenberg (1997), Meyer de Schauensee (1982), Parker *et al.* (1982), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stotz *et al.* (1996), Zimmer (1930, 1939).

### 34. Lara Tapaculo

#### *Scytalopus fuscicauda*

**French:** Mèrulaxe du Lara **German:** Nördlicher Rostbüzeltapaculo **Spanish:** Churrin de Lara

**Taxonomy.** *Scytalopus griseicollis fuscicauda* Hellmayr, 1922, Páramo de Rosas, Lara, Venezuela. Was formerly regarded as a race of *S. magellanicus*; more recently, owing to lack of vocal data, left as a race of *S. griseicollis*, but its isolated geographical distribution makes it unlikely that the two are conspecific. Distinction from *S. meridanus* far from clear, and the two may prove to be conspecific or even synonyms. Further research required. Monotypic.

**Distribution.** Andes of Venezuela in S Lara and Trujillo.



**Descriptive notes.** 10.5 cm. A fairly small tapaculo with unbarred brown flanks. Adult has dark grey upperparts, whitish loreal spot, usually brown wash on nape, dull rusty brown lower back, rump and uppertail-coverts, dusky brown wings, inner remiges with faint rusty spots on outer web, dark greyish or dusky brown tail; underparts paler grey, centre of belly palest, flanks and crissum bright rusty brown and unbarred or with only faint dusky bars; iris dark; bill blackish; tarsus brownish. Juvenile has tail almost uniform dusky brown. **Voice.** Unknown.

**Habitat.** Undergrowth of humid forested ra-

vines, often near streams, at 2500–3200 m.

**Food and Feeding.** Nothing known.

**Breeding.** No data.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. A very poorly known species deserving further study. Might be present at any or all of Dinira, Yacambú and Terepaima National Parks.

**Bibliography.** Cory & Hellmayr (1924), Ejeldsá & Krabbe (1990), Hilty (2003a), Krabbe & Schulenberg (1997), Meyer de Schauensee & Phelps (1978), Rodner *et al.* (2000).

### 35. Matorral Tapaculo

#### *Scytalopus griseicollis*

**French:** Mèrulaxe du matorral **Spanish:** Churrin de Matorral

**German:** Südlicher Rostbüzeltapaculo

**Other common names:** Colombian Tapaculo (*infasciatus*)

On following pages: 36. Paramo Tapaculo (*Scytalopus canus*); 37. Ancash Tapaculo (*Scytalopus affinis*); 38. Neblina Tapaculo (*Scytalopus altirostris*); 39. Vilcabamba Tapaculo (*Scytalopus urubambae*); 40. Diademed Tapaculo (*Scytalopus schulenbergi*); 41. Puna Tapaculo (*Scytalopus simonsi*); 42. Zimmer's Tapaculo (*Scytalopus zimmeri*); 43. White-browed Tapaculo (*Scytalopus superciliosus*); 44. Magellanic Tapaculo (*Scytalopus magellanicus*); 45. Dusky Tapaculo (*Scytalopus fuscus*); 46. Blackish Tapaculo (*Scytalopus latrans*); 47. Large-footed Tapaculo (*Scytalopus macropus*).



**Taxonomy.** *Merulaxis grisei-collis* Lafresnaye, 1840, Bogotá, Colombia.

Previously considered a race of *S. magellanicus*. Owing to lack of vocal data, *S. fuscicauda* has sometimes been treated as conspecific, but this treatment is believed unlikely to be appropriate because of its isolated geographical distribution. Race *infasciatus* was formerly considered variously as a synonym of nominate race of present species, or of *S. meridamus*, or as a race of *S. laebricola*; recently proposed status as a full species, but vocalizations now found to be confusingly similar to those of nominate race of present species, so further study is required in order to establish its taxonomic status. Two subspecies tentatively recognized.

**Subspecies and Distribution.**

*S. g. infasciatus* Chapman, 1915 - E Andes of Colombia (precise range uncertain, type from Páramo de Beltrán).

*S. g. griseicollis* (Lafresnaye, 1840) - E Andes of C Colombia (Cundinamarca and Boyacá).



**Descriptive notes.** Nominate 10 cm, two males 18 g and 19.3 g, 1 female 16.6 g; race *infasciatus* 11.5 cm, two males 17.5 g and 18.4 g. A fairly small tapaculo with bright orange unbarred flanks and pale belly. Adult is mostly grey to dark grey, with back and wings fuscous grey, rump orange-brown, tail brown; breast grey, belly whitish, flanks and vent orange-brown; iris dark; bill blackish; tarsus brownish. Juvenile is cinnamon-brown, all narrowly barred dusky. Race *infasciatus* is bigger, darker, back washed with dark brown, rump and tail-coverts bright tawny, wings dusky brown, flanks and crissum cinnamon-rufous and sometimes lightly barred.

**Voice.** Song 10-15 seconds long, an introductory note at 1.8 kHz followed by trill at even pace of 21-25 up-downstroke notes per second, rising after few notes to constant pitch of 2.2 kHz (first overtone; fundamental almost as loud, occasionally loudest). Scold similar to song, but only 1-1.5 seconds long, sometimes without introductory note, pitch either rising distinctly throughout, or rising at first and falling at end; similar but higher-pitched (3 kHz) scold may also be from this species.

**Habitat.** Low humid and semi-humid scrub, including heavily disturbed and fragmented habitats, at 2600-3900 m. Race *infasciatus* favours stands of *Chusquea* bamboo in humid treeline forest at 2000-3300 m.

**Food and Feeding.** No information.

**Breeding.** Two eggs of nominate race measured 20.8 × 15.6 mm. No other information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Locally fairly common in vicinity of Bogotá; tolerates considerable habitat disturbance and fragmentation. Fairly common in Chingaza National Park; probably occurs also in Pisba, Sumapaz and Cordillera de los Picachos National Parks.

**Bibliography.** Chapman (1915a, 1917), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hilty & Brown (1986), Krabbe & Schulenberg (1997), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stotz *et al.* (1996).

## 36. Paramo Tapaculo

### *Scytalopus canus*

**French:** Mérulaxe du paramo

**German:** Páramotapaculo

**Spanish:** Churrin Paramero

**Taxonomy.** *Scytalopus canus* Chapman, 1915, Paramillo, 12,500 feet [c. 3800 m], Antioquia, Colombia.

Previously treated as a race of *S. magellanicus*. Geographical isolation of the two races, together with readily apparent plumage differences, suggest that they may be more appropriately treated as separate species (see page 751); future study of their vocalizations should assist in determining their taxonomic status. Racial identity of birds from C Andes of Colombia uncertain; tentatively included in race *opacus*. Birds from S of range (S of R Zamora in Ecuador), having different call note and with most males possessing white wing patch, may merit subspecific separation. Two subspecies tentatively recognized.

**Subspecies and Distribution.**

*S. c. canus* Chapman, 1915 - W Andes of Colombia in Antioquia.

*S. c. opacus* J. T. Zimmer, 1941 - C Andes of Colombia (La Leonera, in Caldas; Volcán Puracé) S to Ecuador (in W, only in Carchi) and extreme N Peru.



**Descriptive notes.** 10.5 cm; male 13.9-17.9 g, female 13.4-16 g. A fairly small, dark tapaculo. Adult male is uniformly dark grey above, all deep grey below; iris dark brown; upper mandible blackish, lower dark grey, base often paler; tarsus dark grey-brown to blackish on outside, pale to dark grey-brown on inside. Female is not known with certainty; probably similar to male, but perhaps paler, with brown on upperparts or flanks, as in race *canus*. Juvenile undescribed. Race *opacus* male differs from nominate in having flanks and vent usually ochraceous tawny to cinnamon-brown or darker brown with obscure, relatively narrow, dense dusky bars, or sometimes only trace of brown and barely discernible bars, and in S (S from R Zamora) most males have white primary coverts; female occasionally like male, but usually paler and with brown upperparts, faint dusky barring on tips of inner remiges and on tail, more extensively brown flanks, pinkish-buff central lower belly; juvenile variable (even within single population), brown and barred above, cinnamon-buff to pinkish-buff below, throat and breast sometimes washed grey, underparts varying from fully barred to only flanks barred, or spotted from lower breast downwards; immature much like female but browner, with more extensive pinkish-buff on belly, flank bars sometimes crescent-shaped. Voice. Vocalizations of nominate race unknown. Male *opacus* song a fast, somewhat dry trill up to 30 seconds long, pitch 3-8 kHz (first overtone), pace c. 34 notes per second, usually initiated by a few stuttering, slightly lower-pitched notes; female may simultaneously break into series of 15-20 high-pitched notes, slowly descending from 5.7 to 4.2 kHz, at 5-8 per second. Call in most of range c. 1 second long, repeated at intervals of 2-6 seconds, an evenly paced series of 5-9 "kee" notes, pitch 4 kHz in male, 4.5 kHz in female; homologous call of birds from S of R Zamora resembles a short burst of male song.

**Habitat.** Low *Escallonia* and ericaceous scrub at and above tree-line, and sometimes in *Polylepis* woodland; locally descends into upper reaches of humid forest, mainly in *Chusquea* bamboo; at 3050-4000 m, in N Peru down to 2600 m. Replaced sharply at lower elevations by *S. spillmanni* or *S. parkeri*.

**Food and Feeding.** 36 stomachs held remains of small arthropods; one juvenile stomach contained a berry. Forages on moss-covered trunks, along branches in dense scrub, and on the ground, often in *Blechnum* ferns; sometimes tunnels among roots and mossy rocks.

**Breeding.** Both females with brood patch and juveniles collected in Mar, May and Nov. No other information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Generally fairly common; uncommon and local in Ecuador; rather uncommon in Peru. In Ecuador, occurs in several national parks and ecological reserves, including those of El Angel, Cayambe-Coca, Antisana, Sangay, and Podocarpus.

**Bibliography.** Best *et al.* (1997), Chapman (1915a), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Hilty & Brown (1986), Krabbe (1992b), Krabbe & Schulenberg (1997), Pfeifer *et al.* (2001), Ridgely & Greenfield (2001), Ridgely *et al.* (1998), Rodner *et al.* (2000), Stotz *et al.* (1996).

## 37. Ancash Tapaculo

### *Scytalopus affinis*

**French:** Mérulaxe affin

**German:** Ancashtapaculo

**Spanish:** Churrin de Ancash

**Taxonomy.** *Scytalopus magellanicus affinis* J. T. Zimmer, 1939, Yáñac, Ancash, Peru.

Formerly treated as a race of *S. magellanicus*. Monotypic.

**Distribution.** W Andes of Peru from S Cajamarca S to Ancash.



**Descriptive notes.** 10 cm; male 13-15 g, one female 12.3 g. A small, very pale tapaculo with dark-barred brown flanks. Male is grey above, lower back, wings, rump and tail dark brown, tertials, rump and tail barred dusky; light to pale grey below, flanks and vent light buffy brown with distinct dusky bars; iris dark brown; upper mandible black to blackish, lower blackish or more or less grey with flesh-coloured wash at base; tarsus yellow-ochre, darker at rear. Female resembles male, but more extensively brown above. Juvenile has crown and mantle grey with slight brownish tinge, rest of upperparts light olive-brown, entire

upperparts barred with dusky, and whitish tips to inner remiges; pallid grey below, flanks and vent light olive-brown, sides, flanks and vent barred dusky. Voice. Song a descending "churr" at 3.3-4 kHz (first overtone; fundamental barely audible) repeated for 30 seconds or more at pace of 2.2-2.6 per second. Scold a dry churr 0.6-0.8 seconds long at 3.3-5 kHz, given at irregular intervals of 5-20 seconds.

**Habitat.** Large tussocks of grass and mossy rocks and boulders, often near or in *Polylepis* and *Gynoxys* woodland, at 2835-4100 m.

**Food and Feeding.** Three stomachs held remains of small insects. Moves like a mouse among rocks or grass tussocks; also forages along mossy limbs of *Polylepis* and *Gynoxys* trees.

**Breeding.** Lays in Jan-Feb; juvenile collected in Feb. Two nests known, both globular with side entrance, constructed mainly of grass and moss, and hidden in tussocks of grass. Clutch 2 eggs.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon; locally fairly common, e.g. in Huascarán National Park.

**Bibliography.** Fjeldså (1987), Fjeldså & Krabbe (1990), Krabbe & Schulenberg (1997), Zimmer (1939).

## 38. Neblina Tapaculo

### *Scytalopus altirostris*

**French:** Mérulaxe à bec épais

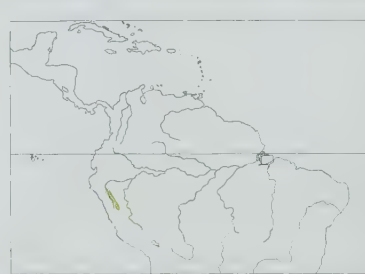
**German:** Neblinatapaculo

**Spanish:** Churrin de Neblina

**Taxonomy.** *Scytalopus magellanicus altirostris* J. T. Zimmer, 1939, Atuén, Amazonas, Peru.

Formerly treated as a race of *S. magellanicus*. Apparently related to, and forming a superspecies with, two undescribed species from SC Peru (one at 3450-3650 m in Pasco, one at 3000-4000 m in Apurímac). Monotypic.

**Distribution.** C Andes of Peru from S Amazonas to Huánuco.



**Descriptive notes.** 10 cm. A small tapaculo with base of bill noticeably elevated. Male is grey above with brown wash on nape, often short, indistinct, pale grey supercilium from above eye to above rear edge of auriculars; brown lower back to upperpart-coverts barred black; wings grey, inner remiges dark brown with blackish subterminal bars, tail dusky grey, obscurely barred buff-brown and blackish; underparts grey, paler than upperparts, flanks and crissum pale tawny-brown and barred blackish. Female is similar, but upperparts more brown, less grey, wings and tail browner and more strongly barred. Juvenile not described.

**Voice.** Song a descending "churr" at 3-4 kHz (first overtone; fundamental sometimes almost as loud) repeated for up to 20 seconds at pace of 1.6-1.8 (after playback, up to 3.7) per second.

**Habitat.** Humid montane forest at 3250-3450 m; locally down to 2450 m.

**Food and Feeding.** No information.

**Breeding.** No information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Generally uncommon, but common in Rio Abiseo National Park.

**Bibliography.** Fjeldså & Krabbe (1990), Krabbe & Schulenberg (1997), Zimmer (1939).

## 39. Vilcabamba Tapaculo

### *Scytalopus urubambae*

**French:** Mérulaxe de Vilcabamba

**German:** Vilcabambatapaculo

**Spanish:** Churrin de Vilcabamba



**Taxonomy.** *Scytalopus magellanicus urubambae* J. T. Zimmer, 1939, Cedrobamba, 12,000 feet [c. 3660 m], Urubamba Valley, Peru.

Formerly treated as a race of *S. magellanicus*. Related to *S. schulenbergi* and *S. simonsi*, and apparently also to two undescribed species from SC Peru (one at 3450-3650 m in Pasco, one at 3000-4000 m in Apurimac). Monotypic.

**Distribution.** Andes of EC Peru in S Cordillera Vilcabamba.



**Descriptive notes.** 10 cm; one male 13 g. A small tapaculo with bright orange flanks. Male has upperparts dark grey, rump and uppertail-coverts rufous-brown with indistinct bars, wings dusky; tail grey, terminally barred black and rufescent; underparts medium grey, belly pale grey, flanks and crissum cinnamon-rufous and indistinctly barred; iris dark; bill blackish; tarsus light brownish. Female is similar, but paler grey, with brown wash on nape, wings more strongly marked with terminal cinnamon spots and dusky subterminal spots on inner remiges, brown tail obscurely barred dusky, brighter rufous flanks unbarred. Juvenile has

upperparts and side of head dark brown with minute dusky tips, lower rump, uppertail-coverts and tip of tail brighter paler brown, these parts and entire tail barred dusky, wing-coverts with subterminal black spot and ochraceous brown tips, secondaries and tertials with black-bordered buff-brown thin subterminal bar, greyish throat tinged buffy, olivaceous-buff breast and belly indistinctly spotted or barred dusky, ochraceous-buff flanks and undertail-coverts with broader distinct dusky bars. **Voice.** Song a "churr" at 3.1-3.4 kHz (first overtone; fundamental barely audible) given for up to 1 minute or more at pace of 1.6-2 per second, occasionally terminated with rapid, rising series of single notes. Scold 0.7-1 second long, a rising and falling "creecree..." of 5-8 notes at 3-4 kHz.

**Habitat.** Humid montane and elfin forest, often in areas dominated by moss and boulders, at 3500-4170 m.

**Food and Feeding.** Diet not recorded. Hops and creeps around in nooks and crannies in boulder fields, and in dense mossy vegetation at tree-line.

**Breeding.** No information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Fairly common, at least in some areas, e.g. locally common in Machu Picchu Historical Sanctuary; observed along Inca Trail between Sayacmarca and Phuyupatamarca.

**Bibliography.** Fjeldså & Krabbe (1990), Krabbe & Schulenberg (1997), Walker (2001), Zimmer (1939).

## 40. Diademed Tapaculo

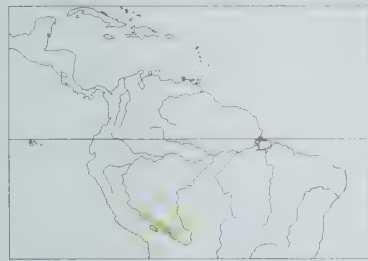
### *Scytalopus schulenbergi*

**French:** Mêrulaxe à diadème **German:** Diademtapaculo **Spanish:** Churrin Diademado

**Taxonomy.** *Scytalopus schulenbergi* Whitney, 1994, 4 km west of Chuspipata, 3215 m, Nor Yungas, La Paz, Bolivia.

Probably closest to *S. simonsi* and to unnamed species from SC Peru (Apurimac); also related to *S. urubambae*. Purported relationship with *S. argentifrons* seems unlikely. Monotypic.

**Distribution.** SE Peru (Vilcanota Mts, in Cuzco) E to C Bolivia (Yungas of Cochabamba).



**Descriptive notes.** 10 cm; two males 15.2 g and 17 g. A small dark tapaculo with pale forecrown. Male has forecrown and supercilium silvery white, contrasting narrow black mask on lower forehead, lores and anterior ocular region; upperparts and tail dark grey, all but crown and scapulars more or less washed with dull brown, brownest on nape, rump dull orange-rufous with dusky bars; grey to dark grey below, lightest on chin and throat, silvery sheen on lower belly; flanks and vent usually dull orange-rufous with dusky bars, occasionally (older birds?) only trace of brown and weak or no barring; iris dark brown; upper mandible

black, lower brownish-black, paler at base; tarsus dark yellow-brown. Female is like male, but silvery of forecrown less extensive and duller, upperparts more heavily washed with brown. Juvenile is golden brown, darkest above, barred and spotted throughout with dusky; immature usually like female but browner, flanks more heavily barred, little or no silvery on forecrown, occasionally all grey on most of upperparts. **Voice.** Male song 7-15 seconds long, a trill of downstroke notes at 3-3.5 kHz (first overtone; fundamental weak), beginning with few spaced notes that accelerate over a few seconds at falling pitch and increasing volume to become level at pace of 9-14 per second, sometimes also increasing pace suddenly half-way through song; alternative song, perhaps only by younger males, is 3-5 seconds long, descending trill at 4-4.5 kHz, often preceded by a few, loud "teki!" notes. Scold by both sexes c. 1 second long, a rising and falling series of 12-16 fairly soft up-downstroke notes at c. 3 kHz, given at irregular intervals of 2-6 seconds for minutes on end; also single, piercing "peeyk!" call.

**Habitat.** Bamboo and other dense undergrowth of humid forest at and just below tree-line, at 2800-3400 m. Replaced at higher elevations by *S. simonsi*, below by *S. parvirostris*.

**Food and Feeding.** Three stomachs all contained insects. Forages on and near the ground, moving along quickly, stopping briefly to scan surrounding mossy areas, branches and vegetation, occasionally reaching to and gleaning from these substrates; also probes moss coating thin vertical trunks, dead branches and horizontal limbs, usually spending less than 3 seconds at such a site.

**Breeding.** Nestlings found in mid-Oct in Peru (Puno); presumed to breed in Sept-Jan. Single known nest was globular with entrance at top, made of moss and lichens with a few small twigs and plant matter, and was placed just under the ground on a slope covered with moss and leaf litter; the entrance led into a tunnel (possibly natural one).

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Bolivian and Peruvian Upper Yungas EBA. Fairly common to uncommon. Occurs in Manu National Park and Biosphere Reserve, and Machu Picchu Historical Sanctuary, in Peru; also, in Carrasco National Park, Bolivia.

**Bibliography.** Kessler & Herzog (1998), Krabbe & Schulenberg (1997), Rosenberg (1986), Stattersfield *et al.* (1998), Walker (2001), Whitney (1994b), Whitney *et al.* (1994).

## 41. Puna Tapaculo

### *Scytalopus simonsi*

**French:** Mêrulaxe de Simons

**German:** Punatapaculo

**Spanish:** Churrin de la Puna

**Taxonomy.** *Scytalopus simonsi* Chubb, 1917, Choquecamate, 4000 m, Cochabamba, Bolivia.

Formerly treated as a race of *S. magellanicus*. Probably closest to *S. schulenbergi* and to undescribed species from SC Peru (Apurimac); also related to *S. urubambae*. Monotypic.

**Distribution.** SE Peru (from Vilcanota Mts, in Cuzco) E to C Bolivia (Cochabamba).



**Descriptive notes.** 10 cm; three males 15.7 g, 17.2 g and 20 g, one female 15.7 g. A small tapaculo with barred light olive-brown flanks and short pale line behind eye. Male has a narrow, short white or pale grey stripe from the eye backwards, occasionally indicated faintly also above lores (from certain angles ocular region and lores appear contrastingly blackish); grey above, nape and back often with light brownish-olive wash, lower back to uppertail-coverts and tail brownish-olive with dusky bars, bars on tail sometimes as vermiculations; some (younger?) birds have brownish wings with blackish bars and vermiculations on

remiges, which have a narrow whitish bar near tips; grey below, throat sometimes light grey, lower belly sometimes pinkish-buff, flanks, vent and undertail-coverts light olive-buff with dense dusky bars; iris dark brown; bill black to blackish, base of lower mandible sometimes paler at side; tarsus dark brown to blackish or greyish-flesh, paler on inside. Female is similar to brown-backed male, or with lighter brown upperparts and dusky spots on crown, nape and back, belly sometimes pinkish-buff, olive-buff of flanks and vent sometimes more extensive and more densely barred. Juvenile not described. **Voice.** Song a "churr" at 2.5-3.2 kHz preceded by a note at 3-4 kHz, repeated for minutes on end at pace of 1.2-2 per second. Scold a series 0.5-0.7 seconds long of 4-6 notes at 3-3.8 kHz. Also, a slowly descending series of high-pitched notes, thought to be made by female.

**Habitat.** Stunted trees and bushes at or above tree-line, also elfin forest, dense tussock grass and mossy boulders; often in patches of *Polylepis* woodland; at 3300-4300 m. Replaced at lower levels by *S. schulenbergi*.

**Food and Feeding.** Two stomachs of a pair collected in tussock grass held grass seeds and insects; two others contained insects. Mainly terrestrial, creeps and hops around among boulders and dense mossy vegetation; at times hops on to boulders or low branches.

**Breeding.** No information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Fairly common to uncommon. Often fairly tame and easier to see than other tapaculos. Occurs in Manu National Park and Biosphere Reserve, and Machu Picchu Historical Sanctuary, in Peru; also, in Carrasco National Park, Bolivia. Seems able to tolerate considerable habitat disturbance.

**Bibliography.** Fjeldså & Krabbe (1990), Kessler & Herzog (1998), Krabbe & Schulenberg (1997), Stotz *et al.* (1996), Walker (2001).

## 42. Zimmer's Tapaculo

### *Scytalopus zimmeri*

**French:** Mêrulaxe de Zimmer

**German:** Graukehltapaculo

**Spanish:** Churrin de Zimmer

**Taxonomy.** *Scytalopus superciliiaris zimmeri* Bond and Meyer de Schauensee, 1940, Padilla, 8200 feet [c. 2500 m], Chuquisaca, Bolivia.

Forms a superspecies with *S. superciliiaris* and perhaps conspecific. Was formerly treated sometimes as a race of *S. magellanicus*. Monotypic.

**Distribution.** Andean slopes in Chuquisaca and Tarija, in S Bolivia.



**Descriptive notes.** 10.5 cm; male 17.6-19.9 g, one female 15.9 g. A fairly small tapaculo with white supercilium and throat and dark-barred brown flanks. Adult has side of head dusky grey, short white supercilium narrow over lores, broader posteriorly; crown, back and wings grey, more or less washed with dull brown on nape, back and inner wing-coverts; tertials, rump and tail dull brown, barred or vermiculated with dusky; throat and upper breast white, lower breast and belly grey, flanks, vent and undertail-coverts pale olive-brown with fairly straight and dense dusky bars; iris dark brown; bill blackish to black;

tarsus pale brown to yellowish straw at front, brown behind, or all bright straw-yellow. Juvenile has only faint buff-white supercilium, dusky-barred dull olive-brown upperparts and sides of head, paler on tips of greater wing-coverts and primary coverts, whitish throat more buff laterally and with faint dusky tips, breast and belly grey with buff-white tips, upper flanks buff, lower flanks, lower belly and undertail-coverts pale buff with dusky barring. **Voice.** Male song 0.3-0.6 seconds long, repeated for minutes on end at pace of 0.6-0.8 per second, a series of 3-5 burred notes, first loudest, the first 1 or 2 at 3.5-4.5 kHz, last 2 or 3 at 2.5-3.5 kHz, last note often a drawn-out "churr", song sometimes given with distinct pause between first and last part or without second part. Calls by both sexes include single or double, rising or falling "quick" notes at 3-4 kHz; also explosive "bruiick!" with several loud harmonics.

**Habitat.** Rocky ravines and shady parts of *Alnus*, mixed *Alnus/Podocarpus* or *Polylepis* woodland in seasonally humid zone, or in ecotones towards adjacent semi-deciduous zone; also on open wet boulder-strewn slopes with bunch-grass and scattered shrubs. Locally in low riparian shrubbery in open country. Occurs at 1700-3200 m. Not known to meet *S. boliviensis*.

**Food and Feeding.** Three stomachs were crammed with seeds and some grit and also held a few insects; one contained only tiny insects. Forages on and near the ground, often among protruding roots on earthy banks in steep ravines, under mossy rocks or among ferns.

**Breeding.** Parents seen tending nestlings in Oct; juvenile collected in Apr. One nest placed in a crevice 3 m above ground in a wall of stone and earth bordering a dry stream. Both parents tended the nestlings.



**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Widespread and fairly common. Only a tiny portion of its range is protected, i.e. Tariquía National Reserve, in Tarija. Owing to steepness of the terrain and the species' tolerance of habitat disturbance, however, it is probably not at any real risk.

**Bibliography.** Fjeldså & Krabbe (1990), Fjeldså & Maijer (1996), Krabbe & Schulenberg (1997), Krabbe *et al.* (1996).

### 43. White-browed Tapaculo

#### *Scytalopus superciliaris*

**French:** Mêrulaxe bridé **German:** Weißbrauentapaculo **Spanish:** Churrín Cejiblanco

**Taxonomy.** *Scytalopus superciliaris* Cabanis, 1883, "neck-breaking ravines in the third mountain chain of Tucumán west of Sauciyaca", north-west Argentina.

Forms a superspecies with *S. zimneri* and perhaps conspecific; both have previously been treated as races of *S. magellanicus*. Two subspecies recognized.

**Subspecies and Distribution.**

*S. s. santabarbarae* Nores, 1986 - Santa Bárbara Mts in Jujuy (and presumably adjacent Salta), NW Argentina

*S. s. superciliaris* Cabanis, 1883 - main Andean slope from Jujuy S to Catamarca, NW Argentina.



**Descriptive notes.** 10.5 cm. A fairly small tapaculo with strikingly white supercilium and throat. Adult has narrow but distinct white supercilium from above eye to above rear edge of auriculars, grey auriculars and side of neck; crown, back and wings brown with grey undertones, or grey with dull brown wash on nape, back and inner wing-coverts; inner remiges, rump and tail dull brown, barred or vermiculated with dusky; throat and upper breast white, in sharp contrast to grey lower breast and belly, with flanks and crissum black-barred pale olive-brown; iris dark; bill blackish; tarsus brownish. Juvenile not described. Race

*santabarbarae* is darker, with upperparts more chestnut, less reddish, and underparts blackish-brown rather than dark grey. **Voice.** Song 0.4-0.5 seconds long, a single burred note at 4 kHz, followed after short pause by drawn-out descending "churr" at 4.5-3.5 kHz, repeated for several minutes at regular pace of 0.6-0.9 per second.

**Habitat.** Undergrowth in *Alnus* and *Polylepis* woodland, often in shady rocky ravines; at 1500-3350 m.

**Food and Feeding.** No information.

**Breeding.** Lays in Oct-Dec, possibly from Sept. Nest an open cup; one was placed in cavity at end of tunnel 0.3 m long under roots of a shrub, two others in 0.5 m tunnels in banks. Clutch 2 eggs, 24.5-25 × 19 mm.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in Argentine and South Bolivian Yungas EBA. Fairly common, at least locally. Occurs in upper reaches of Calilegua National Park and El Rey National Park, and presumably also in Campo de los Alisos National Park.

**Bibliography.** Babarskas *et al.* (1995), Bornschein *et al.* (1998a), Canevari *et al.* (1991), Chebez *et al.* (1999), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Fraga & Narosky (1985), Krabbe & Schulenberg (1997), Mazar Barnett & Pearman (2001), Meyer de Schauensee (1982), Narosky & Yzurieta (1993), Nores (1986), Nores *et al.* (2000), Orog (1958), de la Peña (1989), Ridgely & Tudor (1994), Stiles (1979), Stotz *et al.* (1996).

### 44. Magellanic Tapaculo

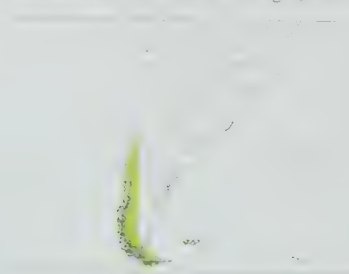
#### *Scytalopus magellanicus*

**French:** Mêrulaxe des Andes **German:** Magellantapaculo **Spanish:** Churrín Magallánico  
**Other common names:** Andean Tapaculo (when combined with other forms previously treated as conspecific)

**Taxonomy.** *Motacilla magellanica* J. F. Gmelin, 1789, Tierra del Fuego.

Formerly included *S. acutirostris*, *S. fuscicauda*, *S. griseicollis*, *S. canus*, *S. affinis*, *S. altirostris*, *S. urubambae*, *S. simonsi*, *S. zimneri*, *S. superciliaris* and *S. fuscus* as races. Studies have shown, however, that it differs vocally from all of them; also occurs in sympatry with last of those in C Chile (from Valdivia to Bio Bio). Monotypic.

**Distribution.** C Chile (from Aconcagua) and W Argentina (Mendoza) S to Tierra del Fuego.



**Descriptive notes.** 9.5 cm; 10.4-13.9 g, mean (Chiloé I) 11 g. Small, dark tapaculo. Male is largely dark grey, forecrown often silvery white or with white "frosting", inner remiges dusky brown with narrow brown tip and black subterminal bar, tail grey, lower flanks and crissum more or less cinnamon-brown with dusky bars; iris dark brown; bill blackish, base greyish; tarsus yellowish-horn to dusky pink. Female is similar, but paler grey. Juvenile is cinnamon-brown to greyish-brown, narrowly barred dusky. **Voice.** Song 0.3 seconds long, of 2 notes, first at 3-3.5 kHz, second 0.5 kHz higher, repeated regularly every 0.6 seconds for minutes on end. Scolds or alarm calls by both sexes include slightly falling trill 0.3-0.6 seconds long of 5-7 notes at c. 3.5 kHz; slightly falling series 0.7 seconds long of 3 notes at 3 kHz; and 0.4-second series of 3 notes, the first longest at c. 3.2 kHz, the following 2 at c. 2.8 kHz, the last shortest. Contact call 1.5-2 seconds, slightly rising trill of 12-15 notes at 3.4-4 kHz.

**Habitat.** Forest, shrubby bogs, along cart tracks and streams, forest edge, fields with slash piles, and rocky grasslands. In C Chile only at c. 1000-2300 m, but to 3500 m in Mendoza; from sea-level to 1000 m in S.

**Food and Feeding.** No information available.

**Breeding.** Lays in Oct-Nov. Nest globular, built of root fibres, mosses and lichens, lined with slender grass or horse hair, and placed in crack between bark and trunk or branch of a tree, or on fern-covered bank or cutting, or among tangles of roots and vines of fallen tree. Clutch 2-3 eggs, rarely 4, 22 × 17 mm; male takes part in incubation. One study on Chiloé I yielded nesting success of 74% (47 nests).

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Generally common to fairly common; common on Mocha I (Chile). Density range on Chiloé I (Chile) estimated at 0.94-1.56 birds/5 ha. Decreases markedly in abundance with decreasing size of habitat fragment. A large part of its range is protected in both Chile and Argentina.

**Bibliography.** Araya & Chester (1993), Bornschein *et al.* (1998a), Bullock (1935), Canevari *et al.* (1991), Chebez *et al.* (1999), Cofré (1999), Cory & Hellmayr (1924), Couve & Vidal-Ojeda (1999), De Santo *et al.* (2002), Figueroa *et al.* (2000), Fjeldså & Krabbe (1990), Fraga & Narosky (1985), Hellmayr (1932), Johnson (1967), Krabbe & Schulenberg (1997), Narosky & Yzurieta (1993), Pefaur & Humphrey (1995), de la Peña (1989), Ridgely & Tudor (1994), Riveros & Villegas (1994), Short (1969b), Sieving *et al.* (1996, 2000), Stotz *et al.* (1996), Straneck & Carrizo (1990b), Vigil (1977), Vuilleumier (1985), Willson *et al.* (1994).

### 45. Dusky Tapaculo

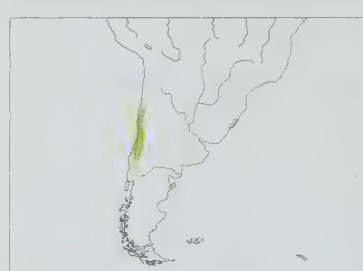
#### *Scytalopus fuscus*

**French:** Mêrulaxe sombre **German:** Dunkelgrauer Tapaculo **Spanish:** Churrín Sombrio

**Taxonomy.** *Scytalopus fuscus* Gould, 1837, Chile.

Formerly treated as a race of *S. magellanicus*, but occurs sympatrically with it at several localities in S of range. Monotypic.

**Distribution.** C Chile from S Atacama to Bio Bio.



**Descriptive notes.** 11 cm. Adult is dark grey, darker (blackish) on forecrown, with lower back and rump washed with brown, underparts paler grey, flanks sometimes light tawny-brown and closely barred with black; bill blackish, paler towards base; tarsus bright pink to flesh-coloured. Juvenile not described. **Voice.** Male song, apparently species' only vocalization, 0.2-0.3 seconds long, a rapid trill distinctly rising from 2.3 to 4.5 kHz (first overtone; fundamental and second overtone almost equally loud, fundamental sometimes loudest) and repeated regularly at pace of 1.2-1.5 per second.

**Habitat.** Inhabits densely vegetated valley bottoms, from sea-level up to 800 m. A specimen supposedly of this species, taken at nearly 4000 m in Atacama, was not accompanied by voice recordings.

**Food and Feeding.** No information.

**Breeding.** Season not documented. One nest globular, constructed of root fibres and moss, lined with horse hair, and placed at end of a 0.6-m tunnel leading through dense tangles at the side of a small stream. Clutch 2-3 eggs, 22 × 17.5 mm.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Locally fairly common. Occurs in La Campana Peñuelas Biosphere Reserve. Habitat has been largely destroyed and remains strongly fragmented. This species should probably be monitored, to ensure that its conservation status does not become unfavourable.

**Bibliography.** Allen (1889), Cory & Hellmayr (1924), Fjeldså & Krabbe (1990), Johnson (1967), Krabbe & Schulenberg (1997), Ridgely & Tudor (1994), Riveros & Villegas (1994), Schönwetter (1979), Stotz *et al.* (1996), Wetmore (1926).

### 46. Blackish Tapaculo

#### *Scytalopus latrans*

**French:** Mêrulaxe noirâtre **German:** Kleiner Einfarbtapaculo **Spanish:** Churrín Negruzco

**Taxonomy.** *Scytalopus unicolor latrans* Hellmayr, 1924, Cerro Munchique, 7000 feet [c. 2140 m], in coast range west of Popayán, Cauca, Colombia.

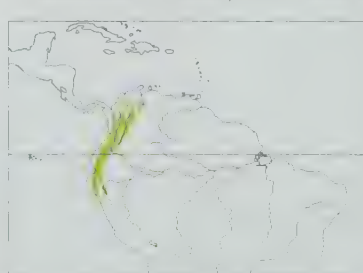
Formerly treated as a race of *S. unicolor*, but differs vocally. Birds from W slope of E Andes in Colombia and from mid-elevations on Amazonian slope from Venezuela to N Peru, although included in nominate race, differ from it somewhat in vocalizations and in plumage coloration, and those from Ecuador, at least, are genetically closer to *subcinereus*. Race *intermedius* not known vocally, and affinities to present species are uncertain. Further study required. Three subspecies tentatively recognized.

**Subspecies and Distribution.**

*S. l. latrans* Hellmayr, 1924 - W & C Andes and W slope of E Andes in Colombia, and W and inter-Andean Ecuador S to N Cañar (locally spilling over to upper Amazonian slope); also at mid-elevations on Amazonian slope from W Venezuela (Mérida) S to N Peru.

*S. l. subcinereus* J. T. Zimmer, 1939 - Pacific slope from SW Ecuador (Azuay) S to NW Peru (Cajamarca, where possibly also on E slope of W Andes near Cutervo).

*S. l. intermedius* J. T. Zimmer, 1939 - C Andes of Peru in S Amazonas.



**Descriptive notes.** 11 cm; male 15.9-20.9 g, female 14.2-20 g. A relatively small, very dark tapaculo. Male is uniform dark grey to blackish-grey, birds from Amazonian slope being blacker; iris dark brown; bill blackish; tarsus dark brown. Female is dark grey, either uniform or with slight olive-brown wash on a few flank feathers, birds from Amazonian slope sometimes with indistinct olive-brown streaks on central belly. Juvenile is apparently dull brown with little barring on underparts; immature a trifle lighter than respective adult, and with tendency towards more brown on flanks. Race *subcinereus* male is entirely black, female

varying from grey to dark grey above and from light grey to grey below with usually extensively



brown flanks uniform or with faint dusky bars. juvenile brown and barred dusky throughout; *intermedius* male resembles previous, and female like female of previous race but darker grey, lightest below, often less or no brown on flanks. **Voice.** Song by both sexes, sometimes in duet, female higher-pitched, up to several minutes long, a single up-downstroke note at 1.2-1.4 kHz (fundamental; first and second overtones almost equally as loud, first sometimes loudest), repeated at pace of 2-8 per second; shorter notes in rhythmic series often given by birds from Amazonian slope and race *subcinereus*, in latter case each note often with very short introductory note. Call by both sexes a frog-like, distinctly rising whistle at 1-1.8 kHz (fundamental) or 2-3.5 kHz (first overtone); female may give explosive “brzk”.

**Habitat.** Humid forest undergrowth, *Chusquea* bamboo or *Neurolepis* cane, humid *Polylepis* scrub, shrubbery, swampy areas, and along ditches; often in second growth, and entering relatively dry regions through riparian shrubbery. Where in contact with *S. canus*, occupies more humid and broadleaf shrubbery or bamboo, rather than ericaceous scrub; in zone of overlap with *S. spillmanni*, found slightly more at edge and in more open or drier understorey than that species; in S parts of range, replaced by *S. parkeri* at higher levels. Occurs at 1500-4000 m; almost exclusively at 1800-2400 m on Amazonian slope.

**Food and Feeding.** Feeds on small arthropods. 32 stomachs all contained insects, in six cases noted as “tiny insects”, in one case including beetles; one contained vegetable matter as well. Food items perch-gleaned from earth, roots, and live or decaying moss, foliage and stems, on and near the ground.

**Breeding.** In W part of range breeding known only during rainy season. One nest was globular, made of extensively branched, black capillary material, and placed in a niche, believed to have been dug by the bird, in an earthen bank covered with spike-moss (*Selaginella*) and ferns. No further data available.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Fairly common to common and widespread through most of range; least common on Amazonian slope. Opportunistic, and often numerous in second growth. Occurs in several protected areas, e.g. Cueva de los Guácharos National Park and La Planada Nature Reserve, in Colombia, and Pasochoa Forest Reserve, La Cajas National Recreation Area and Podocarpus National Park (North), in Ecuador.

**Bibliography.** Best *et al.* (1997), Bloch *et al.* (1991), Coopmans *et al.* (2001), Cory & Hellmayr (1924), Cresswell *et al.* (1999), Hilty (2003a), Krabbe & Schulenberg (1997), Meyer de Schauensee & Phelps (1978), Pfeifer *et al.* (2001), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Skutch (1972), Stotz *et al.* (1996), Zimmer (1939).

47. Large-footed Tapaculo  
*Scytalopus macropus*

**French:** Mèrulaxe à grands pieds    **German:** Großer Einfarbtapaculo    **Spanish:** Churrin Patudo

**Taxonomy.** *Scytalopus macropus* Berlepsch and Stolzmann, 1896, Maraynioc, Junin, Peru. Monotypic.

**Distribution.** C Andes of Peru from S Amazonas S to Junin.



**Descriptive notes.** 14 cm; male 36-43 g, two females 32 g and 32.5 g. Largest *Scytalopus*. Adult is uniform blackish-grey; iris dark brown; bill black; tarsus dark brown. Juvenile is somewhat paler than adult, dark grey, with feathers of upperparts narrowly tipped dark brown, those of underparts narrowly tipped pale buff or whitish. **Voice.** Song lasts up to 1 minute or longer, and is given throughout most of the day, a monotonous series of 1.5-2 kHz notes at intervals of 0.3 seconds, usually terminating with a different (normally higher) note.

**Habitat.** Mossy undergrowth of elfin forest

and cloudforest, primarily along streams, at 2400-3500 m.

**Food and Feeding.** No information.

**Breeding.** No information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Restricted-range species: present in North-east Peruvian Cordilleras EBA. Rare or uncommon, and local. Very poorly known species. At present known to occur in only a single protected area: Río Abiseo National Park. Observed along the Río Chido trail, near Pomacochas.

**Bibliography.** Cory & Hellmayr (1924), Davies *et al.* (1994, 1997), Fjeldsa & Krabbe (1990), Krabbe & Schulenberg (1997), Meyer de Schauensee (1982), O'Neill (1969), Parker *et al.* (1982), Ridgely & Tudor (1994), Stotz *et al.* (1996), Zimmer (1939).







## Genus *MYORNIS* Chapman, 1915

### 48. Ash-coloured Tapaculo

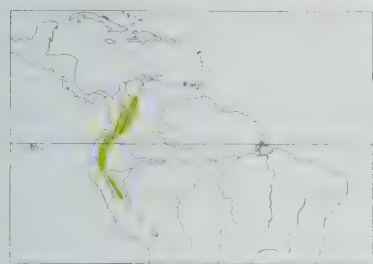
#### *Myornis senilis*

**French:** Mèrulaxe cendré **German:** Aschgrauer Tapaculo **Spanish:** Tapaculo Cenizo

**Taxonomy.** *Merulaxis senilis* Lafresnaye, 1840, Bogotá, Colombia.

Has been placed in genus *Scytalopus* by some authors, but may be related more closely to *Merulaxis*. Monotypic.

**Distribution.** E & C Andes of Colombia, S to Ecuador (in W, S to El Oro and N Loja) and Peru (extreme N, also C Andes S to Huánuco and N Pasco).



**Descriptive notes.** 14 cm; male 20-23.5 g, female 18.1-24.5 g. Dark tapaculo with long tail and elevated base of bill. Adult is medium grey above, somewhat paler on underparts, some individuals with cinnamon wash on flanks and crissum; iris brown; upper mandible blackish-grey, lower dusky or brownish-grey; tarsus grey-brown. Juvenile has lores whitish, upperparts rufous-brown, underparts ochraceous buff with belly whitish, faint dusky barring on rump, tail, tips of innermost remiges, flanks. **VOICE.** Male song, given only seasonally, begins with repetition up to 1 minute long of a piercing "tick" at slightly irregular intervals of 2-4 seconds, these

becoming shorter just before loud terminal trill ("hysterical laughter") 3-4 seconds long that drops steadily from 5 kHz to 3 kHz (first overtone; fundamental almost equally loud), usually followed after brief pause by 1-3 or more repetitions of last part of trill; volume follows the pitch; often responds to playback of song with loud, low trill up to 1 minute long, at pace of 25 notes per second, pitch 1.7-1.8 kHz (first overtone), with up to 4 audible harmonics. Alarm a dry trill 1 second long of c. 25 notes at 3-6 kHz.

**Habitat.** Confined to dense thickets of *Chusquea* bamboo or *Neurolepis* cane in humid montane forest and forest borders, at 2000-3700 m, mostly from 2300 m; locally to 3950 m.

**Food and Feeding.** Details of diet not documented. Hops and creeps through dense tangles of bamboo or cane, usually from near ground to 4 m up; only rarely on the ground, among dead bamboo leaves.

**Breeding.** Fledglings collected in Jun in SE Ecuador and in Aug in N Peru (E La Libertad); brief period of song activity suggests that it is single-brooded. No other information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Common to fairly common or uncommon; fairly common but local in Peru. Occurs in several protected areas, e.g. Podocarpus National Park and Pasochoa Forest Reserve (Ecuador).

**Bibliography.** Bloch *et al.* (1991), Butler (1979), Cory & Hellmayr (1924), Fjeldså & Krabbe (1986, 1990), Hilty & Brown (1986), Hornbuckle (1999), Krabbe & Schulenberg (1997), Meyer de Schauensee (1982), Parker, Parker & Plenge (1982), Parker, Schulenberg *et al.* (1985), Rahbek *et al.* (1993), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Stotz *et al.* (1996), Taylor (1995), Williams & Tobias (1994).

## Genus *MERULAXIS* Lesson, 1830

### 49. Stresemann's Bristlefront

#### *Merulaxis stresemanni*

**French:** Mèrulaxe de Stresemann **Spanish:** Macuquino de Stresemann  
**German:** Nördlicher Stirnhaubentapaculo

**Taxonomy.** *Merulaxis stresemanni* Sick, 1960, near Salvador, Bahia, Brazil.

Probably forms a superspecies with *M. ater*; possibly conspecific, but differs in general size, in proportions of bill and feet, and in vocalizations. Monotypic.

**Distribution.** E Brazil in coastal Bahia: recorded from Recôncavo (near Salvador), Ilhéus and Una.



**Descriptive notes.** 19.5 cm. Large, dark tapaculo with short frontal crest of stiff narrow feathers. Male has uniform slaty-black plumage; iris dark brown; bill black; tarsus dark brown. Distinguished from *M. ater* by larger size, proportionally heavier bill and feet, lack of brown wash on rear part of body. Female differs from male in having crown, side of head and upper back slaty, lower back, wing-coverts and rump very dark brown, coverts faintly edged with dark reddish-brown, remiges blackish-brown, uppertail-coverts dusky slate, tail black, underparts bright rusty red with dark brown wash on sides, vent black, lower mandible light brown with dark

edge. Apparent immature male has brown wash on wing and lower back, with lower underparts dark earth-brown to red-brown with faint dark barring. **VOICE.** Song consists of clicks at c. 1.6 kHz, with terminal trill first rising from 0.7 to 1.1 kHz, then dropping from 1.8 to 0.7 kHz, then rising again slightly before falling to c. 0.5 kHz (fundamental; first overtone nearly as loud, second overtone audible), like song of *M. ater* but distinctly lower-pitched; responds strongly to playback.

**Habitat.** Recorded in low undergrowth at edge of a small clearing along a logging trail, in a patch of forest somewhat drier than the humid forest of the two adjacent valleys; several recently cut trees were still lying on the ground. Below 200 m.

**Food and Feeding.** Insects. Forages on and near the ground as it moves under fallen trunks and in shady parts of the undergrowth; rummages through leaf litter while constantly moving its tail.

**Breeding.** Song of strongly territorial male recorded in Jan; female collected in early May had undeveloped gonads. No other information.

**Movements.** Probably sedentary.

**Status and Conservation.** CRITICAL. Restricted-range species: present in Atlantic Forest Lowlands EBA. Long known from just two specimens, collected near Salvador in 1830s and near Ilhéus in 1945, and was feared extinct owing to widespread deforestation within its limited range. The species was not found during brief surveys in 1986 and 1987 at Una Biological Reserve, the largest protected area (5400 ha) close to its range; in Jan 1995, however, a single male was observed for nearly an hour on Jueirana hacienda, in a 250-ha orchid reserve bordering the biological reserve, the observation documented with photographs and tape recordings. Despite use of playback, subsequent searches have failed to locate the species. The little remaining coastal forest in Bahia is now disappearing at an extremely rapid rate; although this species is legally protected, there seems little hope for its survival.

**Bibliography.** Baudet (2001), Collar & Andrew (1988), Collar, Crosby & Stattersfield (1994), Collar, Gonzaga *et al.* (1992), Collar, Wege & Long (1997), Cordeiro (2001), King, W.B. (1978/79), Mayr (1971), Meyer de Schauensee (1982), Pinto (1978), Ridgely & Tudor (1994), Ruschi (1979), Sargeant & Wall (1996), Sick (1960, 1993), Stattersfield & Capper (2000), Stotz *et al.* (1996), Wege & Long (1995).

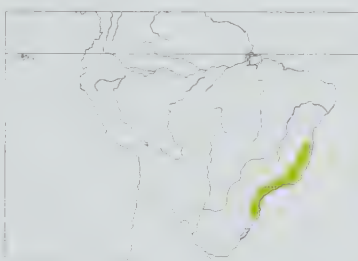
### 50. Slaty Bristlefront

#### *Merulaxis ater*

**French:** Mèrulaxe noir **German:** Südlicher Stirnhaubentapaculo **Spanish:** Macuquino Negro

**Taxonomy.** *Merulaxis ater* Lesson, 1830, Mexico; error = Rio de Janeiro, south-east Brazil. Probably forms a superspecies with *M. stresemanni*; may perhaps be conspecific, but differs in general size, in proportions of bill and feet, and in vocalizations. Monotypic.

**Distribution.** SE Brazil from S Bahia (at least formerly) and Espírito Santo S to E Paraná and E Santa Catarina.



**Descriptive notes.** 18.5 cm; one male 37.2 g, one female 33 g. Large, dark tapaculo with short crest of stiff narrow feathers standing upright at base of bill and on forehead. Male is uniform dark bluish-grey, except for dark brown lower back, secondaries, flanks and vent, and black tail; iris dark brown; upper mandible black, lower dark brown with somewhat paler base; tarsus dark brown, somewhat lighter at front. Female differs in having upperparts uniform earth-brown, throat, breast and belly red-tinged yellowish-brown, flanks and vent dark olive-brown, lower mandible whitish with dark edge. Juvenile not described.

**VOICE.** Song, reportedly only seasonal, begins with series up to 1 minute long of clicks given at slightly irregular intervals of 1.3-1.4 seconds, also varying in pitch between 2.8 and 3.2 kHz, and terminated with a loud trill ("hysterical laughter") 7-9 seconds long that sometimes rises at first, then drops steadily from 2.5 kHz to 1.2-1.4 kHz, then levels, rises slightly, and finally falls to 0.8-1.2 kHz; volume falls, rises and falls with the pitch, and pace accelerates through trill (mostly so at end), starting at 7-9 notes per second and ending at 10-14. Alarm a sonorous "tsewk-tsewk, pit"; other calls include squeaky "keekick" and faint, brief, laughing "he-he-heeheehee".

**Habitat.** Humid lowland and montane forest, and mature secondary woodland. At 400-1800 m, locally down to 100 m; in Rio de Janeiro and Espírito Santo found only in mountains.

**Food and Feeding.** Details of diet not documented. Usually in pairs, members of which forage c. 10-20 m apart, keeping in vocal contact. Hops, walks or runs on the ground, occasionally hopping up into low tangled vegetation or on to logs to scan around. Pushes head into leaf litter, when sighting of prey seemingly aided by the long frontal bristles lifting leaves.

**Breeding.** Song recorded mostly in Oct-Feb, but in São Paulo also in late Jul and in Sept; reportedly single-brooded. No other details known.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species: present in Atlantic Forest Lowlands EBA. Uncommon to locally fairly common. At extremes of range, only one record from Bahia (in 19th century) and two from Santa Catarina; few records from Espírito Santo. Fairly common in lower part of Serra do Mar State Park, in São Paulo; occurs also in Itatiaia National Park, and in Alto do Ribeira, Intervales, and Carlos Botelho State Parks. Lowland habitats have long suffered from deforestation and conversion to agriculture; current major threats include continued agricultural expansion, along with urbanization, industrialization, human settlement and associated road-building. Although montane forests have suffered less, many of those in N of species' range have all but disappeared following expansion of cultivation and pasture; the few remaining patches of forest are under pressure from clearance, and from fires spreading from adjacent cultivated areas.

**Bibliography.** Aleixo & Galetti (1997), Buzzetti (2000), Collar *et al.* (1994), Cordeiro (2001), Cory & Hellmayr (1924), Goerck (1999a), Guix *et al.* (1992), Meyer de Schauensee (1982), Naka *et al.* (2000), Parker & Goerck (1997), Pinto (1978), Ridgely & Tudor (1994), Ruschi (1979), Sargeant & Wall (1996), Schubart *et al.* (1965), Sick (1960, 1993), Stattersfield & Capper (2000), Stotz *et al.* (1996), Tobias *et al.* (1993).

## Genus *PSILORHAMPHUS* P. L. Sclater, 1855

### 51. Spotted Bamboowren

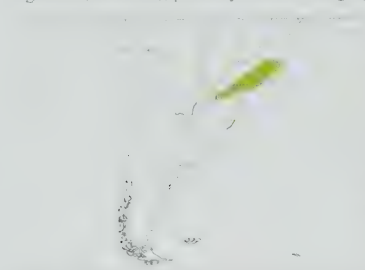
#### *Psilorhamphus guttatus*

**French:** Mèrulaxe des bambous **German:** Trugzaunkönig **Spanish:** Tapaculo Overo



**Taxonomy.** *Leptorhynchus guttatus* Ménériès, 1835, Cuiabá-Sabará, Minas Gerais, south-east Brazil. Systematic position previously disputed; owing to unusual tarsal scutellation, has been variously placed in Thamnophilidae, Troglodytidae and Polioptilidae, but syrinx and sternum are typical of Rhinocryptidae. Monotypic.

**Distribution.** SE Brazil from SE Minas Gerais and W Espírito Santo S to Paraná, and adjacent NE Argentina (Misiones); probably also SE Paraguay.



**Descriptive notes.** 13.5 cm; male 10.5–13 g, one probable female 11.5 g. Male has crown and upper back grey, brown wash on back; rear crown and back with minute white or pale buff spots; rump and uppertail-coverts light reddish-brown, tail grey-brown with narrow white tip, edges of rectrices lined with small black-bordered buff spots; wings reddish-brown, wing-coverts and tertials with small terminal white or buff spots; face and side of neck pale grey, throat and breast whitish or very pale buff with minute dusky spots, lower breast and belly buff, small dusky spots on breast, flanks faintly barred dusky; iris whitish; upper mandible

dusky, lower pale; tarsus brownish. Female is similar, but brown, not grey, above, and perhaps more buffy on underparts. Juvenile not described. **Voice.** Song (very loud for bird's size) 13–20 seconds long, a repetition of a loud, level or rising, pure (at high excitement churred) note at 0.9–1 kHz, 2.4–3 notes per second, "wood-wood-wood", during first 2–3 seconds volume increasing and pitch slightly falling or rising; pauses between songs c. 16 seconds (less after playback).

**Habitat.** Large stands of bamboo at edge of dense secondary forest, less often in vine tangles and other dense vegetation; at 600–1000 m in N, down to 300 m in S.

**Food and Feeding.** Feeds on insects and larvae. Alone or in pairs. Average foraging height 2 m, but will climb as high as 7 m in dense vines; hops tirelessly through branches, fore part of body held low and tail cocked. Occasionally on the ground.

**Breeding.** Nothing known.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Currently considered Near-threatened. Restricted-range species; present in Atlantic forest lowlands EBA. Rare to locally uncommon; possibly overlooked owing to shyness and the fact that it sings only rarely. In Brazil, occurs in Serra do Mar, Alto do Ribeira, Intervalles, and Carlos Botelho State Parks, and in Iguaçu National Park; in Argentina in Iguazú National Park. Lowland habitats in its range have for many decades been depleted through deforestation and conversion to agriculture; continued agricultural expansion, and urbanization, industrialization, human settlement and associated road-building, are current main threats.

**Bibliography.** Aleixo & Galetti (1997), dos Anjos (2001a), dos Anjos & Schuchmann (1997), dos Anjos *et al.* (1997), Bencke & Kindel (1999), Buzzetti (2000), Cândido (2000), Canevari *et al.* (1991), Chebez (1994), Chebez *et al.* (1999), Collar *et al.* (1994), Cordeiro (2001), Costa (2001), Figueiredo & Lo (2000), Goerck (1999a), Narosky & Yzurieta (1993), Navas & Bö (1988), Parker & Goerck (1997), de la Peña (1989), Pichorim *et al.* (2000), Pinto (1978), Ridgely & Tudor (1994), do Rosário (1996), Ruschi (1979), Sargeant & Wall (1996), Sick (1954, 1960, 1979), Stattersfield & Capper (2000), Stotz *et al.* (1996), Straneck & Carrizo (1990a), Venturini *et al.* (2001).

## Genus *MELANOPAREIA* Reichenbach, 1853

### 52. Collared Crescentchest

#### *Melanopareia torquata*

**French:** Cordon-noir à col roux **German:** Rotnackchen-Bandvogel **Spanish:** Pecholuna Brasileño

**Taxonomy.** *Synallaxis torquatus* Wied, 1831, Campo Geral of inner Brazil = *campos* on the Bahia-Minas Gerais border, east Brazil.

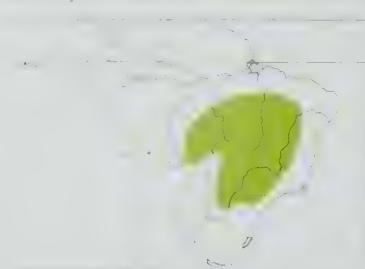
Genus differs considerably from other members of family, though shows certain structural similarities with *Teledromas* (see page 748). Race *bitorquata* has been treated by some authors as a dark variant of *rufescens*. Three subspecies recognized.

**Subspecies and Distribution.**

*M. t. bitorquata* (d'Orbigny & Lafresnaye, 1837) - E Bolivia (NE Santa Cruz).

*M. t. rufescens* Hellmayr, 1924 - C Brazil (from S Pará S to E Mato Grosso do Sul, Minas Gerais and interior São Paulo) and extreme E Paraguay.

*M. t. torquata* (Wied, 1831) - E Brazil in S Piauí and W Bahia.



**Descriptive notes.** 14.5 cm; male 16–23 g, female 17–20 g (*bitorquata*), two unsexed 16.5 g and 18 g (*rufescens*). Adult has grey-brown crown and nape, narrow black-edged pale buff line from base of bill back to side of nape, black lores and side of head; rufous band on side of neck and across upper back; back and rump brown, concealed white patch in centre of back; wings and tail rufescent brown, upperwing-coverts narrowly edged pale olive or white; throat buff, black crescent across breast with narrow white border above, rest of underparts buff, side of breast pale olive-brown, flanks deeper buff with olive wash; iris

brown; upper mandible black, lower silver or blue-grey with black tip; tarsus pale flesh-coloured. Juvenile not described. Race *rufescens* is similar to nominate, but with rufous tinge to forehead and crown; *bitorquata* has upperparts olive-brown, tail brown (less rufescent), rufous nuchal collar deeper in colour and with narrow white-streaked black border along front edge, or collar sometimes lacking, and underparts richer, ochraceous rather than buff. **Voice.** Song, from near top of low shrub, usually a series of 3–6 loud, resonant "chip" notes at 2.3–2.7 kHz, pace 1 per second, intervals between phrases 2.5–3 seconds; occasionally much longer series lasting up to 1 minute. Scold a penetrating churr.

**Habitat.** Stony, nearly grassless *cerrado* with scattered low bushes and gnarled trees such as *Austroplenckia populnea* (Celastraceae) and *Kielmeyera coriacea* (Clusiaceae), in dry, hot regions; also thickets at edge of grassy areas. Lowlands to c. 1000 m.

**Food and Feeding.** Diet not recorded. Alone, less commonly in pairs. Hops on ground or low above it in branches, usually under cover of tall grass.

**Breeding.** Female with yoking egg in Nov in Bolivia. No other information.

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Widespread at fairly low density. Occurs in Noel Kempff Mercado National Park, in Bolivia, and in Serra do Cipó, Brasília, Das Emas, and Serra da Canastra National Parks, in Brazil; likely also to be present in several other protected areas. Although not considered to be at risk, it is a relatively poorly known species.

**Bibliography.** Cavalcanti (1999), Chebez (1994), Davis (1993), Dubs (1992), Ferreira de Vasconcelos *et al.* (1999), Hayes (1995), Killeen & Schulenberg (1998), Lowen *et al.* (1997), Marini, Pereira *et al.* (1997), Meyer de Schauensee (1982), Negret & Cavalcanti (1985), Pinto (1978), Remsen & Traylor (1989), Ridgely & Tudor (1994), Ruschi (1979), Sargeant & Wall (1996), Sick (1960, 1993), Silveira (1998), Stotz *et al.* (1996).

### 53. Olive-crowned Crescentchest

#### *Melanopareia maximiliani*

**French:** Cordon-noir à dos olive

**German:** Olivscheitel-Bandvogel

**Spanish:** Pecholuna del Chaco

**Taxonomy.** *Synallaxis Maximiliani* d'Orbigny, 1835, summit of Mount Biscachal, near Carcuata, Yungas of La Paz, Bolivia.

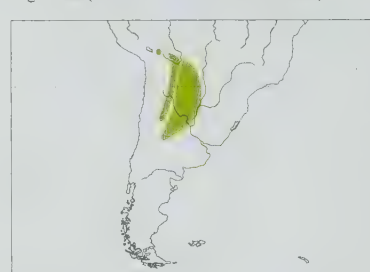
Genus differs considerably from other members of family, though shows certain structural similarities with *Teledromas* (see page 748). Race *pallida*, differing vocally from others, is possibly a separate species. Racial affinities of birds from C Bolivian Yungas in Cochabamba uncertain; tentatively included in race *argentina*. Three subspecies currently recognized.

**Subspecies and Distribution.**

*M. m. maximiliani* (d'Orbigny, 1835) - Yungas of W Bolivia (La Paz).

*M. m. argentina* (Hellmayr, 1907) - C Bolivia (Yungas of Cochabamba, and from W Santa Cruz) S on Andean slopes to NW Argentina (S to W Córdoba and N San Luis).

*M. m. pallida* Nores & Yzurieta, 1980 - SE Bolivia, and lowland Chaco of W Paraguay and N Argentina (from E Formosa S to Córdoba).



**Descriptive notes.** 15 cm; male 17.1–18 g, 1 female 16.7 g. Adult has thinly black-bordered pale buff narrow supercilium from base of bill to rear edge of auriculars, black lores and side of head; crown and upperparts olive-brown, semi-concealed white patch in centre of back, inner secondaries rufescent brown; throat deep buff, black crescent across breast bordered below by chestnut band, remaining underparts ochraceous, darker on flanks; iris dark brown; bill black, basal half of lower mandible blue-grey; tarsus pinkish-grey or pinkish-brown. Juvenile not described. Race *argentina* resembles nominate, but underparts paler; *pallida* is

paler overall, with cinnamon-white throat, paler underparts, and face blackish rather than black. **Voice.** Song loud, resonant, usually increasing in volume. Nominate race and *argentina* have 2 song types, one consisting of "chuck" notes at 2.2–3 kHz given at 4 notes per second either continuously or in irregular series of 4–6, the other a 2.2–2.5 kHz "chi" at 5–6 notes per second in phrases 3–5 seconds long with intervals of 5–9 seconds. Song of *pallida* much faster, 12–13 notes per second, and of different quality. Call a rapid "chit chuck".

**Habitat.** Arid scrub and grassy areas with scattered small bushes, mainly at 1700–2950 m; down to 1200 m in Argentina. Race *pallida* only in heavy saw grass near borders of low thickets in lowland Chaco.

**Food and Feeding.** Diet not recorded. Alone, less often in pairs. Hops on or near the ground, usually under dense cover.

**Breeding.** Breeds in Sept–Dec in Argentina; in C Bolivia (Cochabamba), active nest found in Oct and recently fledged young collected in Apr. Two nests of *pallida* found, each a cup c. 15 cm in height, 13 cm in width, internally 9 cm deep and 8 cm wide, tilted c. 45°, made of vegetable fibre and palm leaves, and hidden near ground, one in low shrubs and one in tall grass; one nest of *argentina* was a 10-cm tunnel in fine bunch-grass, lined with thicker grass. Clutch 2–3 eggs, 20–23 × 16–16.4 mm, white with small black spots or blotches, sometimes also dark chestnut and grey ones, on thick end, i.e. not unmarked white (see page 759).

**Movements.** Probably sedentary.

**Status and Conservation.** Not globally threatened. Uncommon to locally fairly common. Found in several protected areas in Argentina. No potential threats identified.

**Bibliography.** Canevari *et al.* (1991), Chebez *et al.* (1999), Feldsá & Krabbe (1990), Fraga & Narosky (1985), Gemuseus & Sagot (1996), Hayes (1995), Herzog & Kessler (2002), Meyer de Schauensee (1982), Narosky & Yzurieta (1993), Nellar (1993), Nores & Yzurieta (1980), Nores *et al.* (1983), de la Peña (1989, 1997, 1999a), Remsen & Traylor (1989), Remsen *et al.* (1986), Ridgely & Tudor (1994), Short (1975), Stotz *et al.* (1996), Straneck & Carrizo (1990c), Wetmore (1926), Whitney *et al.* (1994).

### 54. Marañon Crescentchest

#### *Melanopareia maranonica*

**French:** Cordon-noir du Marañon

**German:** Großer Schmuckbandvogel

**Spanish:** Pecholuna del Marañón

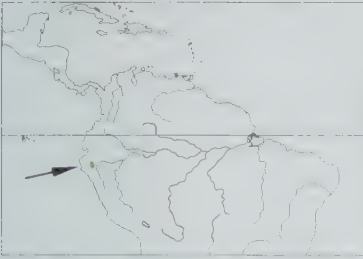
**Taxonomy.** *Melanopareia maranonica* Chapman, 1924, Perico, Río Chinchipe, north Peru.

Genus differs considerably from other members of family, though shows certain structural similarities with *Teledromas* (see page 748). May form a superspecies with *M. elegans*. Vocally very similar to latter, and sometimes considered conspecific, but is proportionally longer-tailed, with distinct plumage pattern, and geographically isolated. Monotypic.

**Distribution.** R Marañón watershed in extreme S Ecuador (S Zamora-Chinchipe) and N Peru (Cajamarca).

**Descriptive notes.** 16 cm; one female 23 g. Male has black crown and nape, creamy-buff supercilium from base of bill to nape side, black lores and face; back and rump greyish-olive, tail black, outermost rectrices edged with buff or whitish, wing-coverts edged silvery white, innermost secondaries edged buff; chin and centre of throat white or pale buff, side and lower edge of throat darker buff, breast chestnut with black crescent in centre, remainder of underparts tawny; iris brown; upper mandible black, lower leaden blue with black tip; tarsus dusky flesh-coloured. Female is similar, but lacks chestnut area on chest. Juvenile not described. **Voice.** Song loud and resonant, of two





types, both increasing in volume at start and decreasing at end: slow song a series of 16-23 "chuck" notes at 2.3-2.8 kHz given at pace of 3-4 per second, very similar to song of *M. elegans*; faster song consists of phrases 3-4 seconds long of 2-9 kHz notes at over 6 notes per second. Scold a dry penetrating churr, much like that of *M. elegans*. Calls include a tyrannid-like "cree" and a high-pitched "tseet"; no similar calls known for *M. elegans*. **Habitat.** Inhabits arid dense scrub, at elevations of 200-750 m. **Food and Feeding.** No published information; said to forage in manner of congeners.

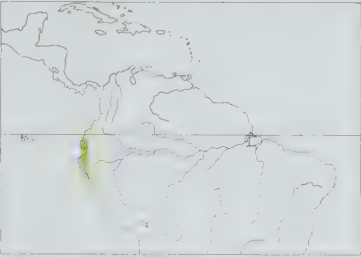
**Breeding.** Nothing known. **Movements.** Probably sedentary. **Status and Conservation.** Not globally threatened. Considered Near-threatened. Restricted-range species: present in Marañón Valley EBA. Local and uncommon. Although it tolerates some disturbance, habitat within its restricted range has progressively deteriorated, due notably to the effects of oil-palm cultivation, cattle-ranching and logging. Does not occur in any protected area, but probably not at immediate risk. **Bibliography.** Bond (1953), Collar *et al.* (1994), Meyer de Schauensee (1982), Parker *et al.* (1982), Ridgely & Tudor (1994), Rodner *et al.* (2000), Stattersfield & Capper (2000), Stotz *et al.* (1996), Wheatley (1994), Zimmer (1931a).

55. Elegant Crescentchest  
*Melanopareia elegans*

**French:** Cordon-noir élégant **German:** Kleiner Schmuckbandvogel **Spanish:** Pecholuna Elegante

**Taxonomy.** *Synallaxis elegans* Lesson, 1844, Guayaquil, west Ecuador. Genus differs considerably from other members of family, though shows certain structural similarities with *Teledromas* (see page 748). May form a superspecies with *M. maranonica*. Vocally very similar to latter, and sometimes considered conspecific, but has proportionally shorter tail and distinct plumage pattern, and is geographically isolated. Birds from S Ecuador (Loja) are probably intergrades between nominate race and *paucalensis*. Two subspecies recognized.

**Subspecies and Distribution.** *M. e. elegans* (Lesson, 1844) - W Ecuador (S from Manabí and extreme S Pichincha). *M. e. paucalensis* (Taczanowski, 1884) - Pacific NW Peru S to La Libertad.



**Descriptive notes.** 14.5 cm; male 16-20.2 g, female 15.5-19 g. Male has black crown and nape, pale creamy-buff supercilium from base of bill to nape, black lores and face; back and rump olive-brown, tail black, innermost rectrices edged olive-brown, outermost edged buff or whitish, primaries olive-brown, outermost primaries edged silvery white, wing-coverts and secondaries largely rufous; chin and centre of throat white or pale buff, side and lower edge of throat darker buff, breast dark chestnut with black crescent in centre, flanks and belly tawny, paler in centre of belly; iris brown; upper mandible black, lower grey or blue-grey with black tip; tarsus light horn or greyish tan. Female is similar, but has crown sooty, and lacks chestnut band on chest. Juvenile not described. Race *paucalensis* closely resembles nominate, but female has crown olive, like back. **Voice.** Song loud and resonant, increasing in volume initially, often decreasing at end, a series of 7-30 "chuck" notes at c. 2.4 kHz, 4 notes per second, intervals between phrases 3-7 seconds. Scold a dry penetrating churr. **Habitat.** Dense dry scrub and undergrowth of low semi-arid woodland; locally in fairly humid but heavily disturbed areas. Lowlands to 2000 m, locally to 2400 m; to 1700 m in Peru. **Food and Feeding.** Diet not recorded. Forages singly. Hops on or near the ground, usually under dense cover. **Breeding.** No information. **Movements.** Probably sedentary. **Status and Conservation.** Not globally threatened. Restricted-range species: present in Tumbesian Region EBA. Uncommon to locally fairly common: fairly common on Santa Elena Peninsula, Ecuador. Occurs in Machalilla National Park and in Cerro Blanco Forest Reserve, in Ecuador; probably also present in other protected areas. Adaptable; tolerates considerable habitat disturbance and degradation, and may be spreading N following deforestation. No potential threats identified. **Bibliography.** Best *et al.* (1997), Bond (1953), Butler (1979), Chapman (1926), Meyer de Schauensee (1982), Parker *et al.* (1982), Pople *et al.* (1997), Ridgely & Greenfield (2001), Ridgely & Tudor (1994), Ridgely *et al.* (1998), Rodner *et al.* (2000), Stotz *et al.* (1996), Taylor (1995), Williams & Tobias (1994), Zimmer (1931a).







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Allen, J.A. (1889). *Bull. Amer. Mus. Nat. Hist.* **2**: 95 [*Myrmochanes*], 98 [*Scytalopus bolivianus*].

Allen, J.A. (1900). *Bull. Amer. Mus. Nat. Hist.* **13**: 159 [*Grallaria bangsi*], 160 [*Myrmotherula schisticolor sanctaemartiae*].

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Baker (1918). *Bull. Brit. Orn. Club* **39**: 20 [*Pitta caerulea hosei*].

Bangs (1898). *Proc. Biol. Soc. Washington* **12**: 158 [*Automolus rubiginosus rufipectus*], 177 [*Grallaria rufula spatiator*].

Bangs (1899). *Proc. Biol. Soc. Washington* **13**: 99 [*Sclerurus albigularis propinquus*], 101 [*Scytalopus latebricola*].

Bangs (1901). *Auk* **18**: 365 [*Cercomacra tyrannina crepera*], 367 [*Automolus ochrolaemus exsertus*].

Bangs (1902). *Proc. New Engl. Zool. Cl.* **3**: 45 [*Sclerurus mexicanus pullus*], 71 [*Formicivora grisea alticincta*], 83 [*Anabacerthia striatocollis anxia*], 84 [*Premnoplex brunnescens coloratus*].

Bangs (1903). *Bull. Mus. Comp. Zool.* **39**: 150 [*Xiphorhynchus susurrans confinis*].

Bangs (1906). *Proc. Biol. Soc. Washington* **19**: 107 [*Hylophylax naevioides capitis*].

Bangs (1907). *Auk* **24**: 297 [*Gymnocichla nuceipes erratilis*], 298 [*Synallaxis albesens latitabunda*], 299 [*Dendrocolaptes sanctithomae hesperius*].

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Bangs & Peters, J.L. (1928). *Bull. Mus. Comp. Zool.* **68**: 392 [*Sittasomus griseicapillus gracileus*], 393 [*Xiphorhynchus flavigaster tardus*].

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Berlepsch (1888). *Ibis*: 129 [*Myrmeciza longipes boucardi*].

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Berlepsch (1893). *Orn. Monatsber.* **1**: 11 [*Grallaria excelsa*].

Berlepsch (1901). *J. Orn.* **49**: 91 [*Schizoeaca harterti*], 92 [*Asthenes maculicauda*], 93 [*Asthenes heterura*], 94 [*Asthenes modesta rostrata*], 95 [*Asthenes humilis robusta*], *Premnoplex brunnescens stictonotus*], 97 [*Terenura sharpei*], 98 [*Gymnopathys salvini*].

Berlepsch (1901). *Ornis* **11**: 197 [*Asthenes ottonis*].

Berlepsch (1906). *Bull. Brit. Orn. Club* **16**: 99 [*Thamnophilus caerulescens dinellii, Asthenes baeri*].

Berlepsch (1907). *Ornis* **14**: 364 [*Thripadectes flammulatus bricenoi*], 365 [*Thripadectes virgaticeps sclateri*], 366 [*Philydor rufum bolivianum*].

Berlepsch (1908). *Nov. Zool.* **15**: 157 [*Microrhopias quixensis microstictus*].

Berlepsch (1912). *Orn. Monatsber.* **20**: 17 [*Conopophaga aurita snethlagae*], 20 [*Hylophylax naevius ochraceus*].

Berlepsch & Hartert (1902). *Nov. Zool.* **9**: 60 [*Thripophaga cherriei*], 65 [*Xiphocolaptes promeropirhynchus orenocensis*], 67 [*Dendrocincla fuliginosa phaeochroa*], 72 [*Myrmotherula cherriei*], 74 [*Myrmotherula menetriesii pallida*], 76 [*Myrmeciza longipes griseipectus*].

Berlepsch & Hellmayr (1905). *J. Orn.* **53**: 32 [*Myrmeciza hemimelaena pallens*].

Berlepsch & Leverkühn (1890). *Ornis* **6**: 21 [*Synallaxis cabanisi*], 24 [*Xiphorhynchus ocellatus lineatocapilla*], 25 [*Myrmotherula behni*], 27 [*Grallaria varia intercedens*].

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Berlepsch & Stolzmann (1894). *Ibis Ser.* **6**, no. **13**: 393 [*Asthenes flammulata taczanowskii*], 394 [*Myrmotherula longicauda*], 396 [*Myrmotherula spodiota sororia*].

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Berlepsch & Stolzmann (1901). *Ibis Ser.* **8**, no. **4**: 718 [*Asthenes sclateri punensis*].

Berlepsch & Stolzmann (1901). *Ornis* **10**: 194 [*Grallaria guatemalensis sororia, Geositta crassirostris fortis*].

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Berlepsch & Taczanowski (1884). *Proc. Zool. Soc. London* **1883**: 561 [*Hylocistis subulatus assimilis*], 563 [*Xiphorhynchus erythropygius aequatorialis*], **1884**: 299 [*Thripadectes holostictus striatidorsus*].

Berthoz (1927). *Bull. Mus. Hist. Nat. Paris* **33**: 492 [*Automolus rubiginosus brunnescens*].

Berthoz (1938). *Bull. Brit. Orn. Club* **58**: 90 [*Pitius castaneus*].

Bertoni, W. (1901). *An. Cient. Paraguayos* **1**: 70 [*Campylorhamphus*], 140 [*Drymophila rubricollis*], 148 [*Chamaeza campanisona tshororo*].

Bierregaard, Cohn-Haft & Stotz (1997). *Orn. Monographs* **48**: 113-114 [*Cercomacra laeta waimiri*].

Binford (1965). *Occas. Pap. Mus. Zool. Univ. Michigan* **30**: 1-5 [*Dendrocolaptes sanctithomae sheffleri*].

Blake (1949). *Fieldiana Zool.* **31**: 267 [*Terenura callinota guianensis*].

Blake (1957). *Fieldiana Zool.* **39**: 51-53 [*Formicarius rufifrons*].

Blake (1959). *Loziana* **11**: 5 [*Xiphocolaptes promeropirhynchus macarenae*].

Blake (1971). *Auk* **88**(1): 179 [*Synallaxis coursei*].

Blyth (1843). *J. Asiatic Soc. Bengal* **12**: 1008 [*Pitta cyanea*].

Blyth (1846). *J. Asiatic Soc. Bengal* **15**: 312 [*Cymbirhynchus macrorhynchus affinis*].

Blyth (1862). *J. Asiatic Soc. Bengal* **31**: 343 [*Pitta phayrei*].

Boddaert (1783). *Table Planches Enlum.*: 38 [*Dendrocolaptes certhia*], 39 [*Formicivora grisea, Gymnopathys rufigula*], 43 [*Myrmornis torquata*], 43-44, 50 [*Formicarius*], 44 [*Hypocnemis cantator, Myrmeciza atrothorax, Formicarius colma, Grallaria varia*].

Bonaparte (1850). *Consp. Av.* **1**: 256 [*Pitta guajana schwaneri, Pitta sordida mulleri, Pitta sordida forsteni*], 322 [*Smithornis*].

Bonaparte (1857). *Bull. Soc. Lim. Normandie* **2**: 35 [*Gymnopathys*].

Bond (1950). *Auk* **67**(2): 240 [*Xiphocolaptes promeropirhynchus solivagus*].

Bond (1950). *Proc. Acad. Nat. Sci. Philadelphia* **102**: 10 [*Myrmotherula leucophthalma dissita*], 13 [*Myrmotherula sunensis yessupi*].

Bond (1956). *Proc. Acad. Nat. Sci. Philadelphia* **108**: 244 [*Synallaxis albigularis rodolpheii*].

Bond & Meyer de Schauensee (1940). *Notulae Naturae* **44**: 1 [*Scytalopus zimmeri*], 2 [*Batara cinerea excubitor, Thamnophilus doliatus cadvaladeri*], 3 [*Grallaria rufula cochabambae, Cranioleuca vulpina foxi*].

Bond & Meyer de Schauensee (1940). *Proc. Acad. Nat. Sci. Philadelphia* **92**: 161 [*Herpsilochmus axillaris senex*].

Bond & Meyer de Schauensee (1941). *Notulae Naturae* **93**: 4 [*Synallaxis azarae samaipatae*]; **94**: 1 [*Thripophaga fusciceps dimorpha*].

Bornschein, Reinert & Pichorim (1998). *Ararajuba* **6**(1): 6-8 [*Scytalopus iraiensis*].

Bornschein, Reinert & Teixeira (1995). *Publ. Tec. Cient. Inst. Iguaçu Pesq. Preserv. Amb. Rio J.* **1**: 9-11 [*Stymphalornis*], 11-13 [*Stymphalornis acutirostris*].

Borrero (1960). *Noved. Colomb.* **1**(5): 241 [*Schizoeaca fuliginosa fumigata*].

Borrero & Hernández (1958). *Caldasia* **8**: 263 [*Thamnophilus multistriatus oecotonophilus*].

Boucard & Berlepsch (1892). *Hummingbird* **2**: 44 [*Drymophila squamata stictocorypha*].

Brodtkorb (1938). *Occas. Pap. Mus. Zool. Univ. Michigan* **367**: 2 [*Asthenes baeri chacoensis*].

Brodtkorb (1939). *Proc. Biol. Soc. Washington* **52**: 83 [*Rhinocrypta lanceolata saturata*].

Brüggemann (1876). *Abh. Naturwiss. Ver. Bremen* **5**: 64 [*Pitta erythrogaster palliceps*], 65 [*Pitta kochi*].

Burmeister (1837). *Handb. Naturgesch.* **2**: 769 [*Pygarrhichas*].

Burmeister (1856). *Syst. Übers. Thiere Bras.* **3**: 81 [*Dysithamnus xanthopterus*].

Burmeister (1860). *J. Orn.* **8**: 249 [*Geositta rufipennis, Upucerthia certhioides luscinia*], 251 [*Coryphistera, Coryphistera alaudina*].

Burmeister (1861). *Reise La Plata Staaten* **2**: 464 [*Upucerthia validirostris*].

Burmeister (1869). *Proc. Zool. Soc. London* **1868**: 636 [*Cranioleuca sulphurifera*].

Burmeister (1888). *Ibis*: 495 [*Furnarius cristatus*].

Cabanis (1847). *Archiv Naturgeschichte* **13**: 211 [*Pyriglena, Myrmoborus lugubris*], 212 [*Pyriglena leuconota picea, Hypocnemis*], 213 [*Hylophylax poecilnotus*], 223 [*Dysithamnus*], 224 [*Herpsilochmus*], 225 [*Formicivora grisea intermedia*], 230 [*Thamnomanes, Thamnomanes caesius glaucus*], 338 [*Thripophaga*].

Cabanis (1848). *In: Schomburgk, Reisen Brit. Guiana* **3**: 685 [*Myrmoborus leucophrys angustirostris*], 689 [*Philydor pyrrhodes*].

Cabanis (1861). *J. Orn.* **9**: 95 [*Formicarius analis hoffmanni*], 96 [*Formicarius analis crissalis*], 243 [*Lepidocolaptes souleyetii compressus*].

Cabanis (1872). *J. Orn.* **20**: 234 [*Taraba major granadensis, Taraba major semifasciatus*].

Cabanis (1873). *J. Orn.* **21**: 65 [*Lochmias nematura obscuratus, Thamnistes anabatinus rufescens, Hypocnemis cantator subflava*], 66 [*Philydor ruficaudatum subflavescens*], 318 [*Grallaria andicola*], 319 [*Schizoeaca, Schizoeaca palpebralis, Cranioleuca albicapilla, Asthenes humilis*].

Cabanis (1874). *J. Orn.* **22**: 98 [*Upucerthia jelskii*].

Cabanis (1878). *J. Orn.* **26**: 196 [*Asthenes sclateri*].

Cabanis (1883). *J. Orn.* **31**: 105 [*Scytalopus superciliaris*], 109 [*Phacellodomus rufifrons sincipitalis, Phacellodomus striatocollis maculipectus*], 110 [*Synallaxis azarae superciliosa*].

Cabanis & Heine (1859). *Mus. Hein., Th.* **2**: 6 [*Chamaeza ruficauda, Chamaeza turdina*], 9 [*Myrmoborus*], 10 [*Cercomacra nigrescens, Percnostola*], 11 [*Terenura*], 16 [*Sakesphorus canadensis pulchellus*], 18 [*Hypodaedalus*], 19 [*Biatas*], 20 [*Acropternis*], 22 [*Furnarius leucopus assimilis*], 26 [*Phleocryptes, Phleocryptes melanops schoenobaemus*], 29 [*Philydor lichensteini, Philydor rufum colombianum*], 33 [*Xenops rutilans heterurus*], 36 [*Xiphocolaptes promeropirhynchus procerus*], 38 [*Lepidocolaptes lacrymiger lafresnayi, Lepidocolaptes falcinellus*], 39 [*Lepidocolaptes lacrymiger warszewiczii*].

Capparella, Rosenberg & Cardiff (1997). *Orn. Monograph* **48**: 165-166 [*Percnostola rufifrons jensoni*].

Carrier (1910). *Ann. Carnegie Mus.* **6**: 632, 657 [*Campylorhamphus pusillus borealis*], 649 [*Dendrocincla anabatina saturata*].

Carrier (1930). *Proc. Acad. Nat. Sci. Philadelphia* **82**: 368 [*Microrhopias quixensis nigriventris, Hypocnemis cantator saturata*], 370 [*Hylopezus berlepschi yessupi*].

Carrier (1932). *Proc. Acad. Nat. Sci. Philadelphia* **83**: 465 [*Microrhopias quixensis albicauda*]; **84**: 1 [*Cinclodes aricomae*], 4 [*Hylophylax naevius pervianus*], 6 [*Hylophylax naevius inexpectatus*].

Carrier (1933). *Proc. Acad. Nat. Sci. Philadelphia* **85**: 9 [*Upucerthia jelskii saturata, Leptasthenura yanacensis*], 14 [*Conopophaga castaneiceps chapmani*], 16 [*Thamnophilus unicolor caudatus*], 21 [*Grallaria flavirostris similis, Grallaricula ferrugineipectus leymebambae*], 22 [*Grallaria quitensis atuenisii*].

Carrier (1934). *Proc. Acad. Nat. Sci. Philadelphia* **86**: 321 [*Synallaxis cherriei saturata*], 323-324 [*Sakesphorus bernardi shumbae*], 324 [*Thamnophilus punctatus huallagae*].



## Carriker / Hartert

- Carriker (1935). *Proc. Acad. Nat. Sci. Philadelphia* **87**: 321 [*Myrmotherula grisea*], 324 [*Chamaeza mollissima yungae*], 326 [*Sclerurus albigularis albicollis*], 327 [*Sittosomus griseicapillus viridis*, *Simoxenops striatus*], 350 [*Thamnornis schistogynus intermedius*], 352 [*Xiphorhynchus triangularis intermedius*].
- Carriker (1936). *Auk* **53**: 316 [*Formicivora grisea rufiventris*].
- Cassin (1850). *Proc. Acad. Nat. Sci. Philadelphia* **5**: 106 [*Gymnocyclus nudiceps*].
- Cassin (1860). *Proc. Acad. Nat. Sci. Philadelphia* **12**: 189 [*Pittasoma*, *Pittasoma michleri*].
- Chapman (1889). *Bull. Amer. Mus. Nat. Hist.* **2**: 154, 156 [*Campylorhamphus trochilrostris venezuelensis*].
- Chapman (1895). *Bull. Amer. Mus. Nat. Hist.* **7**: 323 [*Synallaxis cinnamomea carri*].
- Chapman (1899). *Bull. Amer. Mus. Nat. Hist.* **12**: 156 [*Synallaxis cinnamomea striatipectus*].
- Chapman (1912). *Bull. Amer. Mus. Nat. Hist.* **31**: 146 [*Formicarius rufipectus carrikeri*], 147 [*Grallaria milleri*], 148 [*Grallaria alleni*, *Cinclodes excelsior columbianus*], 149 [*Hellmayrea gularis cinereiventris*], 150 [*Lepidocolaptes lacrymiger sanctaemartae*].
- Chapman (1914). *Bull. Amer. Mus. Nat. Hist.* **33**: 173 [*Formicarius analis connectens*], 196 [*Xenops milleri*], 614 [*Thamnornis anabatinus intermedius*, *Myrmotherula schisticolor interior*], 616 [*Formicivora grisea hondae*], 617 [*Hylopesus dives barbaeae*], 618 [*Synallaxis azarae media*], 620 [*Synallaxis moesta obscura*, *Synallaxis gujanensis columbiana*], 621 [*Synallaxis rutilans caquetensis*], 622 [*Synallaxis brachyura caeae*, *Sclerurus mexicanus andinus*].
- Chapman (1915). *Auk* **32(4)**: 410 [*Myornis*], 412 [*Scytalopus canus*], 414 [*Scytalopus griseicollis infasciatus*], 418 [*Scytalopus sanctaemartae*], 420 [*Scytalopus panamensis*].
- Chapman (1915). *Bull. Amer. Mus. Nat. Hist.* **34**: 641 [*Conopophaga castaneiceps chocoensis*], 642 [*Xiphorhynchus lachrymosus alarum*], 643 [*Asthenes flammulata quindiana*], 644 [*Automolus rubiginos saturatus*].
- Chapman (1917). *Bull. Amer. Mus. Nat. Hist.* **36**: 392 [*Pittasoma rufopileatum harterti*], 394 [*Grallaria guatemalensis chocoensis*].
- Chapman (1919). *Bull. Amer. Mus. Nat. Hist.* **41**: 326 [*Cinclodes fuscus tucumanus*], 327 [*Leptasthenura andicola peruviana*], 328 [*Asthenes urubambensis*].
- Chapman (1919). *Proc. Biol. Soc. Washington* **32**: 255 [*Grallaria watkinsi*], 257 [*Grallaria flavirostris boliviana*], 258 [*Phacellodomus striateps griseipectus*, *Hylocryptus*], 259 [*Hylocryptus erythrocephalus*, *Xenops rutilans connectens*], 260 [*Xiphorhynchus triangularis bangsi*], 261 [*Lepidocolaptes abolineatus madeirae*], 262 [*Lepidocolaptes lacrymiger bolivianus*].
- Chapman (1921). *Amer. Mus. Novit.* **2**: 2 [*Thamnophilus ruficapillus cochabambae*], 3 [*Microhospis quixensis emiliae*], 4 [*Drymophila devillei subochracea*], 5 [*Hypocnemis hypoxantha ochraceiventris*, *Asthenes sclateri cuchacanachae*], 18: 4 [*Asthenes wyatti aequatorialis*], 6 [*Thamnophilus zarumae*], 8 [*Leptasthenura venothorax*], 9 [*Leptasthenura pileata cajabambae*].
- Chapman (1921). *Bull. US Natl. Mus.* **117**: 83 [*Asthenes modesta proxima*].
- Chapman (1922). *Amer. Mus. Novit.* **31**: 6 [*Grallaria flavirostris ochraceiventris*], 7 [*Grallaria flavirostris zarumae*].
- Chapman (1923). *Amer. Mus. Novit.* **67**: 6 [*Pyrgilena leuconota pacifica*], 8 [*Grallaria rufula occabambae*], 86: 2 [*Dysithamnus occidentalis*], 4 [*Myrmotherula longicauda australis*], 6 [*Myrmeciza griseiceps*], 7 [*Hylophylax poecilnotus duidae*], 8 [*Grallaria albicula*, *Grallaria hypoleuca castanea*], 9 [*Grallaria ruficapilla connectens*], 10 [*Schizoeaca helleri*], 11 [*Synallaxis gujanensis canipileus*], 12 [*Synallaxis brachyura griseonucha*], 13 [*Cranioleuca antisiensis palambae*, *Asthenes wyatti azuay*], 14 [*Pseudocolaptes boissonneauti intermedius*], 15 [*Anabacerthia striatocollis yungae*], 16 [*Syndactyla subalaris tucarcanae*, *Xenops tenuirostris acutirostris*], 17 [*Sclerurus albigularis zamorae*], 18 [*Glyphorhynchus spirurus albigularis*, *Lepidocolaptes souleyetii esmeraldae*], 96: 9 [*Myrmotherula ornata saturata*, *Formicarius analis zamorae*], 10 [*Hylopesus fulviventris caquetae*], 11 [*Grallaria peruviana*].
- Chapman (1924). *Amer. Mus. Novit.* **123**: 1 [*Xenornis*, *Xenornis setifrons*], 2 [*Dysithamnus occidentalis puniteficus*], 3 [*Melanopareia maranonica*], 4 [*Chamaeza campanisona punctigula*], 5 [*Grallaria lineifrons*], 7 [*Synallaxis cabanisi fulviventris*], 8 [*Xiphorhynchus chunchotambo napensis*].
- Chapman (1925). *Amer. Mus. Novit.* **187**: 3 [*Thripadectes virgaticeps sumaco*], 4 [*Campylorhamphus trochilrostris napensis*], 191: 7 [*Premnoplex tatei*], 205: 4 [*Dysithamnus mentalis napensis*], 6 [*Grallaria flavirostris mindoensis*], 8 [*Synallaxis stictothorax chinchipensis*, *Myrmotherula sinensis*], 9 [*Myrmotherula longipennis zimmeri*].
- Chapman (1926). *Amer. Mus. Novit.* **231**: 1 [*Grallaria squamigera canicauda*], 2 [*Grallaria capitalis*].
- Chapman (1927). *Amer. Mus. Novit.* **250**: 2 [*Grallaria rufula cajamarcae*].
- Chapman (1928). *Amer. Mus. Novit.* **332**: 9 [*Rhagmatornis melanosticta brunneiceps*], 11-12 [*Simoxenops ucayalae*].
- Chapman (1929). *Amer. Mus. Novit.* **380**: 17 [*Myrmothera simplex duidae*, *Taraba major duidae*], 18 [*Roraima*].
- Chapman (1934). *Amer. Mus. Novit.* **762**: 2 [*Aphrastura spinicauda bullocki*], 3 [*Scelorchilus rubecula mochae*].
- Chapman (1937). *Auk* **54**: 208 [*Simoxenops*].
- Chapman (1939). *Amer. Mus. Novit.* **1051**: 9 [*Roraima adista duidae*, *Automolus roraimae duidae*].
- Chasen (1935). *Bull. Raffles Mus.* **10**: 43 [*Eurylaimus javanicus pallidus*].
- Chasen & Kloss (1926). *Ibis* **Ser. 12**, no. 2: 285 [*Calymptomena viridis siberu*].
- Cherrie (1891). *Auk* **8**: 191 [*Myrmeciza exsul occidentalis*].
- Cherrie (1891). *Proc. US Natl. Mus.* **14**: 338 [*Deconychura*], 339 [*Deconychura longicauda typica*, *Premnoplex*], 342 [*Hylopesus perspicillatus lizanoi*].
- Cherrie (1909). *Brooklyn Inst. Arts & Sci. Mus. Bull.* **1**: 390 [*Gymnophis rufigula pallidus*].
- Cherrie (1916). *Brooklyn Inst. Arts & Sci. Mus. Bull.* **2**: 377 [*Sakesphorus canadensis intermedius*].
- Cherrie (1916). *Bull. Amer. Mus. Nat. Hist.* **35**: 186 [*Philydor erythrocerum lyra*], 187 [*Lepidocolaptes angustirostris praedatus*], 395 [*Hypocnemis cantator collinsi*], 396 [*Formicivora rufa chapmani*].
- Cherrie & Reichenberger (1921). *Amer. Mus. Novit.* **27**: 5 [*Furnarius rufus paraguayae*].
- Chubb (1916). *Bull. Brit. Orn. Club* **36**: 47 [*Grallaria nuchalis obsoleta*, *Pyrgilena leuconota castanoptera*].
- Chubb (1917). *Bull. Brit. Orn. Club* **38**: 17 [*Scytalopus simonsi*], 34 [*Conopophaga aurita occidentalis*].
- Chubb (1918). *Ann. and Mag. Nat. Hist. Ser. 9, no. 2: 123 [*Mackenziaena, Frederickena, Sakesphorus*].*
- Chubb (1918). *Bull. Brit. Orn. Club* **38**: 47 [*Grallaria andicola punensis*], 84 [*Cercomacra cinerascens immaculata*], 85 [*Cercomacra tyrannina saturator*], 86 [*Grallaria nana kukukenensis*], 87 [*Lochmias nematura castanonotus*].
- Chubb (1919). *Bull. Brit. Orn. Club* **39**: 41 [*Sclerurus mexicanus macconnelli*, *Sclerurus mexicanus peruvianus*], 42 [*Sclerurus mexicanus bahiae*], 51 [*Dendrocincla merula bartletti*], 60 [*Synallaxis albescent josephinae*], 78 [*Synallaxis macconnelli*].
- Chubb (1921). *Birds British Guiana* **2**: 80 [*Grallaria guatemalensis roraimae*].
- Clancey (1963). *Durban Mus. Novit.* **6(19)**: 236-237 [*Smithornis capensis cryptoleucus*], 238 [*Smithornis capensis conjunctus*].
- Clark, A.H. (1902). *Auk* **19**: 264 [*Synallaxis albescent nesiotis*].
- Contreras (1977). *Physis (Sec. C)* **35(91)**: 214-215 [*Geositta rufipennis giati*].
- Contreras (1980). *Hist. Nat. (17)*: 30 [*Asthenes baeri neiffi*], **1(19)**: 138-141 [*Geositta rufipennis hoyi*].
- Cornalia (1849). *Vert. Syn. Mus. Mediol. ext. Oseul. coll.*: 6, 12 [*Microhospis gujanensis*].
- Cory (1913). *Field Mus. Nat. Hist. Publ.*, *Orn. Ser.* **1**: 290 [*Dendrocincla tyrannina hellmayri*], 291 [*Formicivora grisea fumosa*, *Margarornis squamiger peruvianus*], 292 [*Synallaxis candei venezuelensis*].
- Cory (1916). *Field Mus. Nat. Hist. Publ.*, *Orn. Ser.* **1**: 337 [*Conopophaga lineata ceareae*], 338 [*Thamnornis saturatus huallagae*], 339 [*Schizoeaca fuliginosa peruviana*], 340 [*Certhiax cinnamomea cearensis*, *Asthenes pudibunda neglecta*], 341 [*Xiphorhynchus fuscus atlanticus*].
- Cory (1919). *Auk* **36**: 88 [*Thamnophilus caeruleus cearensis*], 89 [*Furnarius leucopus endocous*], 274 [*Synallaxis gujanensis huallagae*], 275 [*Pseudocolaptes boissonneauti oberholseri*], 340 [*Xiphocolaptes albicollis bahiae*].
- Cory (1919). *Proc. Biol. Soc. Washington* **32**: 150 [*Siptornopsis*].
- Dabbene (1917). *Physis (Buenos Aires)* **3(13)**: 54 [*Geositta punensis*], 58 [*Cinclodes oustaleti hornensis*], 59 [*Cinclodes antarcticus maculirostris*].
- Dabbene (1920). *Hornero* **2**: 135 [*Leptasthenura aegithaloides pallida*].
- Dalmas (1900). *Mém. Soc. Zool. France* **13**: 140 [*Xiphorhynchus susurrans jardinei*], 141 [*Formicivora grisea tobagenensis*].
- Davis & O'Neill (1986). *Wilson Bull.* **98(3)**: 338-339 [*Herpsilochmus parkeri*].
- Deignan (1946). *Proc. Biol. Soc. Washington* **59**: 55 [*Pitta guajana ripleyi*].
- Deignan (1947). *Proc. Biol. Soc. Washington* **60**: 120 [*Psarisomus dalhousiae divinus*, *Eurylaimus javanicus friedmanni*].
- Deignan (1948). *J. Washington Acad. Sci.* **38**: 109 [*Serilophus lunatus atrestus*, *Serilophus lunatus aphobus*, *Serilophus lunatus impavidus*].
- Delacour (1926). *Bull. Brit. Orn. Club* **47**: 12 [*Pitta cyanea willoughbyi*].
- Delacour (1927). *Bull. Brit. Orn. Club* **47**: 155 [*Pitta soror tonkinensis*].
- Delacour (1932). *L'Oiseau (Nouv. Sér.)* **2**: 421 [*Pitta oatesi bolovenensis*].
- Delacour (1934). *Bull. Brit. Orn. Club* **54**: 97 [*Pitta soror petersi*].
- Delacour & Jabouille (1928). *Bull. Brit. Orn. Club* **48**: 130 [*Pitta cyanea aurantiaca*].
- Delacour & Jabouille (1930). *L'Oiseau* **11**: 405 [*Pitta oatesi castaneiceps*].
- Des Murs (1847). *Hist. Fis. Pol. Chile, Zool.* **1**: 315 [*Sylviorthorhynchus*], 316 [*Sylviorthorhynchus desmursi*].
- Des Murs (1847). *Icon. Orn.* **9**: pl. 52 [*Xiphorhynchus flavigaster eburneirostris*].
- Des Murs (1849). *Icon. Orn.* **12**: pl. 69 [*Campylorhamphus pucherani*], pl. 70 [*Lepidocolaptes souleyetii*], pl. 71 [*Lepidocolaptes lacrymiger*].
- Des Murs (1855). In: Castelnau, *Expéd. Amer. Sud* **1**: 45 [*Xiphorhynchus kieneri*], 46 [*Xiphorhynchus ocellatus weddellii*, *Xiphorhynchus obsoletus palliatus*], 47 [*Glyphorhynchus spirurus castelnaudii*].
- Des Murs (1856). In: Castelnau, *Expéd. Amer. Sud* **18**: 50 [*Conopophaga peruviana*], 51 [*Hylophylax naevius theresae*], 53 [*Sclateria naevia argentata*, *Hylophylax punctulatus*].
- Domaniewski (1925). *Bull. Int. Acad. Polon. Sci. Lett. Sci. Math. Nat.* **762** [*Thamnophilus ruficapillus jacezewskii*].
- Domaniewski & Stolzmann (1922). *Disc. Biol. Arch. Soc. Sci. Varsaviensis* **1(8)**: 2 [*Thamnophilus nigrocinereus kulczynskii*].
- Elliot (1870). *Proc. Zool. Soc. London* **1870**: 242 [*Clytoctantes, Clytoctantes alixii*].
- Eyton (1839). *Proc. Zool. Soc. London* **1839**: 104 [*Pitta granatina coccinea*].
- Eyton (1849). *Contr. Orn.* **130** [*Drymornis bridgesi*], 131 [*Thripadectes flammulatus*].
- Eyton (1851). *Contr. Orn.* **75** [*Dendrocolaptes picumnus multistrigatus*], 76 [*Dendrexetastes*], 159 [*Asthenes modesta*].
- Eyton (1852). *Contr. Orn.* **23** [*Drymornis*], 26 [*Xiphorhynchus obsoletus notatus*].
- de Filippi (1847). *Mus. Med. Anim. Vert.* **9**: 31 [*Drymophila genei*].
- Finsch (1912). *Orn. Monatsber.* **20**: 102 [*Pitta erythrogastrer habenichti*].
- Fitzpatrick & Willard (1990). *Auk* **107(2)**: 239-240 [*Cercomacra manu*].
- Fraser (1843). *Proc. Zool. Soc. London* **1842**: 190 [*Pitta angolensis pulih*].
- Friedmann (1945). *Proc. Biol. Soc. Washington* **58**: 83 [*Myrmeciza disjuncta*].
- Garnot (1826). *Ann. Sci. Nat., Paris* **7**: 45 [*Cinclodes antarcticus*].
- Geoffroy Saint-Hilaire, I. (1832). *Mag. Zool.* **2**: pl. 3 [*Rhinocrypta lanceolata*].
- Geoffroy Saint-Hilaire, I. (1832). *Nov. Ann. Mus. Hist. Nat. Paris* **1**: 393 [*Upucerthia*], 394 [*Upucerthia dumetaria*].
- Geoffroy Saint-Hilaire, I. (1838). *Compt. Rend. Acad. Sci. Paris* **6**: 440 [*Philepitta*].
- Giebel (1868). *Zeitschr. Ges. Naturwiss.* **31**: 11 [*Furnarius leucopus tricolor*].
- Gilliard (1939). *Amer. Mus. Novit.* **1016**: 1 [*Grallaria excelsa phelpsi*].
- Gmelin, J.F. (1788). *Syst. Nat.* **1(1)**: 384 [*Xiphorhynchus picus*], 442 [*Myrmotherula surinamensis*, *Sclateria naevia*], 446 [*Cymbirhynchus macrorhynchus*], 465 [*Furnarius rufus*], 480 [*Certhiax cinnamomeus*].
- Gmelin, J.F. (1789). *Syst. Nat.* **1(2)**: 825 [*Percnostola rufifrons*], 827 [*Conopophaga aurita*], 957 [*Cinclodes patagonicus*], 978 [*Aphrastura spinicauda*], 979 [*Scytalopus magellanicus*], 988 [*Synallaxis gujanensis*], 1003 [*Hylophylax naevius*].
- Gonzaga (1988). *Bull. Brit. Orn. Club* **108(3)**: 132 [*Myrmotherula fluminensis*].
- Gonzaga & Pacheco (1990). *Bull. Brit. Orn. Club* **110(4)**: 189-191 [*Formicivora serrana interposita*], 191 [*Formicivora littoralis*].
- Gould (1834). *Proc. Zool. Soc. London* **1833**: 133 [*Serilophus lunatus*].
- Gould (1837). *Proc. Zool. Soc. London* **1836**: 89 [*Scytalopus*, *Scytalopus fuscus*].
- Gould (1838). *Birds Austr. and Adj. Islands* **2**: pl. 4 [*Pitta elegans vigorsii*].
- Gould (1839). In: Darwin, *Zool. Voy. 'Beagle'* **3**: 69 [*Eremobius, Eremobius phoenicurus*], 80 [*Limnornis*, *Limnornis rectirostris*], 81 [*Limnornis curvirostris*].
- Gould (1842). *Birds Austr.* **6**: pl. 9 [*Pitta iris*].
- Gould (1855). *Ann. and Mag. Nat. Hist. Ser. 2, no. 15: 344 [*Formicarius colma nigrifrons*, *Chamaeza nobilis*], 345 [*Phlegopsis erythroptera*].*
- Gould (1857). *Proc. Zool. Soc. London* **1857**: 65 [*Pitta elegans concinna*].
- Gould (1868). *Proc. Zool. Soc. London* **1868**: 76 [*Pitta versicolor similima*].
- Gould (1871). *Ann. and Mag. Nat. Hist. Ser. 4, no. 7: 340 [*Pitta arquata*].*
- Gould (1877). *Birds Asia* **29**: pl. 75 [*Pitta granatina ussleri*].
- Graves (1987). *Wilson Bull.* **99(3)**: 314 [*Grallaria blakei*].
- Graves (1997). *Orn. Monographs* **48**: 22 [*Cercomacra parkeri*].
- Graves & Robbins (1987). *Proc. Biol. Soc. Washington* **100(1)**: 121-124 [*Siptornis striatocollis nortoni*].
- Graves, O'Neill & Parker (1983). *Wilson Bull.* **95(1)**: 1-2 [*Grallaria ochraceifrons*].
- Gray, G.R. (1840). *List Gen. Birds*: 16 [*Cinclodes*], 18 [*Dendrocincla*], 25 [*Rhinocrypta*], 36 [*Cymbilaimus*].
- Gray, G.R. (1841). *List Gen. Birds*: 34 [*Myrmeciza*].
- Gray, G.R. (1846). *Gen. Birds* **1**: pl. 41 [*Chilia melanura*].
- Gray, G.R. (1847). *Gen. Birds* **1**: pl. 43 [*Xiphocolaptes promeropirhynchus lineatocephalus*].
- Gray, G.R. (1860). *Proc. Zool. Soc. London* **1860**: 351 [*Pitta erythrogastrer cyanonota*].
- Gray, G.R. (1864). *Proc. Zool. Soc. London* **1864**: 143 [*Smithornis rufolateralis*].
- Griscom (1924). *Amer. Mus. Novit.* **141**: 3 [*Scytalopus argentifrons chiriquensis*], 4 [*Margarornis rubiginos boultoni*].
- Griscom (1927). *Amer. Mus. Novit.* **280**: 6 [*Xiphocolaptes promeropirhynchus panamensis*, *Xiphorhynchus picus extimus*], 7 [*Xiphorhynchus susurrans marginatus*], 8 [*Campylorhamphus pusillus olivaceus*].
- Griscom (1928). *Amer. Mus. Novit.* **293**: 4 [*Hylopesus dives flammulatus*].
- Griscom (1929). *Bull. Mus. Comp. Zool.* **69**: 167 [*Myrmotherula ignota*], 172 [*Deconychura longicauda darienensis*].
- Griscom (1930). *Amer. Mus. Novit.* **414**: 3 [*Synallaxis erythrothorax pacifica*].
- Griscom (1932). *Bull. Mus. Comp. Zool.* **72**: 348 [*Campylorhamphus trochilrostris brevipennis*].
- Griscom (1937). *Auk* **54(2)**: 196 [*Xiphorhynchus erythropygius parvus*].
- Griscom & Greenway (1937). *Bull. Mus. Comp. Zool.* **81**: 433 [*Philydor erythropterus diluviale*].
- Grote (1926). *Orn. Monatsber.* **34**: 17 [*Smithornis capensis suahelicus*].
- Gyldenstolpe (1930). *Ark. Zool.* **21A(26)**: 2 [*Synallaxis cherriei*], 3 [*Synallaxis cherriei napoensis*], 5-6, 28-29 [*Myrmotherula longicauda pseudoaustralis*], 5-6, 36-38 [*Myrmotherula longicauda soderstromi*].
- Gyldenstolpe (1941). *Ark. Zool.* **33B(12)**: 6-7 [*Hypocnemoides melanopogon minor*], **33B(13)**: 6-7 [*Cymbilaimus sanctaemariae*], 7-8 [*Hylopesus auricularis*].
- Gyldenstolpe (1951). *Ark. Zool. (Ser. 2)* **2**: 14 [*Thamnomanes caesus similimus*, *Myrmotherula assimilis transamazonica*].
- Hartert (1894). *Nov. Zool.* **1**: 674 [*Dysithamnus leucostictus tucuyensis*].
- Hartert (1896). *Bull. Brit. Orn. Club* **5**: 47 [*Pitta elegans maria*].
- Hartert (1896). *Nov. Zool.* **3**: 174 [*Pitta elegans virginalis*].
- Hartert (1898). *Bull. Brit. Orn. Club* **7**: 29 [*Myrmeciza berlepschi*], 30 [*Automolus rubiginos nigricauda*].
- Hartert (1898). *Nov. Zool.* **5**: 493 [*Formicarius nigricapillus destructus*].
- Hartert (1900). *Bull. Brit. Orn. Club* **11**: 37 [*Grallaria nana cumanaensis*].



Hartert (1901). *Bull. Brit. Orn. Club* **11**: 71 [Synallaxis rutilans omissa].

Hartert (1901). *Nov. Zool.* **8**: 370 [Pittasoma rufopileatum, Sclerurus mexicanus obscurior].

Hartert (1902). *Nov. Zool.* **9**: 61 [Automolus infuscatus paraensis].

Hartert (1904). *Bull. Brit. Orn. Club* **14**: 73 [Smithornis capensis albigularis].

Hartert (1904). *Gen. Avium* **1**: 6-7 [Psarisomus dalhousiae borneensis].

Hartert (1909). *Bull. Brit. Orn. Club* **25**: 9 [Pitta schneideri].

Hartert (1909). *Nov. Zool.* **16**: 210 [Leptasthenura aegithaloides berlepschi], 213 [Asthenes steinbachi].

Hartert (1916). *Bull. Brit. Orn. Club* **37**: 4 [Corydon sumatranus brunescens].

Hartert (1917). *Bull. Brit. Orn. Club* **37**: 31 [Synallaxis cinnamomea bolivari].

Hartert & Butler (1898). *Bull. Brit. Orn. Club* **7**: 1 [Serilophus lunatus rothschildi].

Hartert & Goodson (1917). *Nov. Zool.* **24**: 416 [Dendrocolaptes picumnus seileri], 417 [Lepidocolaptes souleyetii littoralis, Xenops minutus ridgwayi], 495 [Cymbilaimus lineatus intermedius], 496 [Thamnophilus punctatus interpositus], 497 [Thamnophilus doliatus tobagensis], 498 [Synallaxis unirufa meridana], 499 [Pseudocolaptes boissoneauitii meridae].

Hartert & van Someren (1916). *Bull. Brit. Orn. Club* **36**: 59 [Smithornis capensis medianus].

Hartlaub (1843). *Rev. Zool.* **6**: 65 [Pitta sordida cucullata].

Hartlaub (1844). *Rev. Zool.* **7**: 370 [Sclerurus guatemalensis].

Hartlaub (1852). *Rev. et Mag. Zool. Ser. 2, no. 4*: 4 [Formicivora erythranotos].

Heine (1859). *J. Orn.* **7**: 406 [Pitta erythrogaster rufiventris].

Heine (1860). *J. Orn.* **8**: 185 [Xiphocolaptes promeropirhynchus fortis].

Hellmayr (1902). *Orn. Monatsber.* **10**: 33 [Gymnophis leucaspis aequatorialis], 34 [Formicarius colma amazonicus].

Hellmayr (1903). *J. Orn.* **51**: 537 [Xiphorhynchus lachrymosus eximius].

Hellmayr (1903). *Verh. zool.-bot. Ges. Wien* **53**: 208 [Herpsilochmus roraimae], 211 [Myrmotherula menetriesii berlepschi], 216 [Thamnophilus doliatus difficilis], 218 [Hylopezus berlepschi, Grallaria varia cinereiceps], 219 [Lepidocolaptes angustirostris bahiae].

Hellmayr (1904). *Bull. Brit. Orn. Club* **14**: 51 [Deconychura stictolaema secunda], 52 [Thamnophilus aroyae], 53 [Thamnophilus caeruleus paraguayensis], 54 [Formicivora grisea orenocensis].

Hellmayr (1904). *Orn. Monatsber.* **12**: 53 [Phlegopsis nigromaculata paraensis].

Hellmayr (1905). *Bull. Brit. Orn. Club* **15**: 54 [Conopophaga roberti], 55 [Xiphorhynchus elegans insignis, Automolus rubiginosus cinnamomeigula].

Hellmayr (1905). *Nov. Zool.* **12**: 288 [Cercomacra cinerascens selateri], 289 [Cercomacra brasiliana], 290 [Hylophylax poecilnotus vidua], 503 [Thripophaga berlepschi].

Hellmayr (1906). *Abh. K. Bay. Akad. Wiss.* **22**: 663 [Drymophila ochropyga].

Hellmayr (1906). *Bull. Brit. Orn. Club* **16**: 53 [Thamnomanes caesus hoffmannsi], 83 [Gymnophis leucaspis daguae], 84 [Myrmotherula ornata hoffmannsi], 91 [Chamaeza turdina chionogaster], 109 [Myrmoborus myotherinus ochrolaema], 19: 9 [Pernostola caurensis].

Hellmayr (1906). *Nov. Zool.* **13**: 31 [Dysithamnus mentalis andrei], 340 [Myrmeciza exsul maculifer].

Hellmayr (1907). *Bull. Brit. Orn. Club* **19**: 51 [Pernostola leucostigma humaythae], 52 [Rhegmatorhina hoffmannsi], 53 [Skutchie borbae], 54 [Synallaxis albitor simoni], 74 [Melanopareia maximiliani argentina].

Hellmayr (1907). *Nov. Zool.* **14**: 13 [Synallaxis rutilans amazonica], 15 [Synallaxis rutilans tertia], 61 [Thamnophilus schistaceus heterogynus], 64-65 [Thamnomanes caesus persimilis].

Hellmayr (1908). *Nov. Zool.* **15**: 68 [Sakesphorus luctuosus araguayae].

Hellmayr (1908). *Verh. Orn. Ges. Bayern* **8**: 142 [Pernostola rufifrons subcristata].

Hellmayr (1909). *Bull. Brit. Orn. Club* **23**: 65 [Formicivora melanogaster bahiae], 66 [Dendrocolaptes hoffmannsi].

Hellmayr (1909). *Rev. Franç. d'Orn.* **1**(7): 98-99 [Formicivora iheringi], 100 [Hylexetastes perrotii uniformis].

Hellmayr (1910). *Nov. Zool.* **17**: 358 [Myrmoborus myotherinus sororius].

Hellmayr (1910). *Rev. Franç. d'Orn.* **1**(11): 164 [Myrmoborus lugubris feminus], 165 [Myrmoborus lugubris berlepschi].

Hellmayr (1911). *Proc. Zool. Soc. London* **1911**: 1159 [Myrmotherula pacifica].

Hellmayr (1911). *Rev. Franç. d'Orn.* **2**: 1 [Cranioleuca muelleri], 25 [Thamnomanes schistogynus], 49 [Anabacerthia striaticollis venezuelana], 50 [Philydor dimidiatum baeri], 51 [Pittasoma rufopileatum rosenbergi].

Hellmayr (1912). *Abh. K. Bay. Akad. Wiss.* **26**: 92 [Dysithamnus mentalis emiliae].

Hellmayr (1912). *Verh. Orn. Ges. Bayern* **11**: 160 [Automolus rubiginosus watkinsi], 162 [Thamnophilus ruficapillus marcapatae].

Hellmayr (1917). *Verh. Orn. Ges. Bayern* **13**: 111 [Philydor erythrocerum ochrogaster], 113 [Asthenes berlepschi], 117 [Grallaricula nana olivascens], 190 [Sittasomus griseicapillus reiseri], 199 [Automolus roraimae].

Hellmayr (1919). *Anz. Orn. Ges. Bayern* **1**: 3 [Pseudocolaptes boissoneauitii medianus].

Hellmayr (1920). *Anz. Orn. Ges. Bayern* **3**: 18 [Xenops rutilans guayae].

Hellmayr (1920). *Archiv Naturgeschichte* **85A**(10): 81 [Lepidocolaptes lacrymiger carabayeae].

Hellmayr (1922). *Orn. Monatsber.* **30**: 54 [Scytalopus atratus], 55 [Scytalopus fuscicauda], 56 [Scytalopus caracae], 58 [Scytalopus meridanus].

Hellmayr (1924). *Field Mus. Nat. Hist. Publ., Zool. Ser.* **12**: 71 [Scelorchilus albicollis atacamae], 72 [Geositta cunicularia deserticolor], 13: 11 [Scytalopus latrans], 84 [Thamnophilus unicolor grandior], 94 [Thamnophilus punctatus leucogaster], 96 [Thamnophilus pelzelni], 167 [Melanopareia torquata rufescens], 253 [Sclateria naevia toddi], 321 [Phaenostictus mcleamani pacificus].

Hellmayr (1925). *Field Mus. Nat. Hist. Publ., Zool. Ser.* **13**: iii, iv, 54 [Limnortites], iii, iv, 74 [Oreophylax], iv, 53 [Chilia melanura atacamae], iv, 61 [Leptasthenura aegithaloides griseusens], 138 [Asthenes modesta australis], 142 [Asthenes dorbignyi consobrina], 144 [Asthenes humicola polysticta], 159 [Phacellodomus rufifrons pervianus], 160 [Phacellodomus rufifrons specularis], 280 [Xiphocolaptes promeropirhynchus sanctaemartae], 290 [Xiphorhynchus picus saturator].

Hellmayr (1929). *Field Mus. Nat. Hist. Publ., Zool. Ser.* **12**: 377 [Formicivora serrana].

Hellmayr (1929). *J. Orn.* **2**: 47 [Myrmotherula longipennis transitiva], 55 [Myrmoborus myotherinus incanus], 64 [Pernostola leucostigma rufifacies].

Hellmayr (1932). *Field Mus. Nat. Hist. Publ., Zool. Ser.* **19**: 168 [Upicerthia albigula], 201 [Leptasthenura striata superciliosus].

Hellmayr & Madarász (1914). *Ann. Mus. Nat. Hungar.* **12**(1): 88 [Grallaricula ferrugineipectus rara].

Hellmayr & Seilern (1912). *Archiv Naturgeschichte* **78A**(5): 97 [Pseudocolaptes boissoneauitii striaticeps], 107 [Premnoplex brunescens rostratus], 127 [Drymophila caudata klagesi], 131 [Chamaeza campanisona boliviana].

Hellmayr & Seilern (1912). *Bull. Brit. Orn. Club* **31**: 13 [Grallaria guatemalensis aripoensis].

Hellmayr & Seilern (1912). *Verh. Orn. Ges. Bayern* **11**: 157 [Thripadectes virgaticeps klagesi].

Hellmayr & Seilern (1914). *Verh. Orn. Ges. Bayern* **12**: 90 [Pernostola lophotes], 92 [Grallaria ruficapilla avilae].

Hellmayr & Seilern (1915). *Verh. Orn. Ges. Bayern* **12**: 203 [Dysithamnus mentalis cubreanus].

Hermann (1783). *Tab. Affin. Anim.*: 180, 210, 235 [Myrmormis], 189 [Myrmothera campanisona], 229 [Myrmotherula brachyura].

Hermann (1804). *Obs. Zool.*: 135 [Dendrocolaptes].

Hernández & Rodríguez (1979). *Caldasia* **12**(60): 574 [Grallaria alleni andaquiensis], 577 Grallaria rufocinerea romeroana].

Hodgson (1837). *J. Asiatic Soc. Bengal* **6**: 103 [Pitta nipalensis].

Hodgson (1839). *J. Asiatic Soc. Bengal* **8**: 36 [Serilophus lunatus rubropygius].

Horsfield (1821). *Trans. Linn. Soc. London* **13**(14): 170 [Eurylaimus, Eurylaimus javanicus].

Hoy (1968). *J. Orn.* **109**(2): 229 [Geositta rufipennis otowi].

Hume (1873). *Stray Feathers* **1**: 477 [Pitta oatesi].

Hume (1875). *Stray Feathers* **3**: 296 [Pitta gurneyi].

von Ihering, H. (1905). *Rev. Mus. Paulista* **6**: 436 [Xiphorhynchus elegans juruanus], 437 [Dendrocolaptes certhia juruanus], 439 [Thamnophilus aethiops juruanus], 440 [Myrmotherula haematona amazonica], 441 [Myrmotherula longipennis garbei].

Illiger (1811). *Prodromus Syst. Mammalium Avium*: 213 [Xenops, Xenops minutus genibarbis].

Isler, Alvarez, Isler & Whitney (2001). *Wilson Bull.* **113**(2): 165-169 [Pernostola arenarum].

Isler, Álvarez, Isler, Valqui, Begazo & Whitney (2002). *Auk* **119**(2): 377-378 [Myrmeciza castanea centuncularum].

Isler, Isler & Whitney (1997). *Orn. Monographs* **48**: 377-378 [Thamnophilus stictocephalus parkeri].

Jameson (1835). *Edinburgh New Phil. J.* **18**: 589 [Psarisomus dalhousiae].

Jardine (1847). *Ann. and Mag. Nat. Hist.* **19**: 80 [Synallaxis cinnamomea terrestris], 81 [Xiphorhynchus susurrans], 82 [Sittasomus griseicapillus griseus].

Jardine (1850). *Contr. Orn.*: 82-10 [Asthenes flammulata].

Jardine & Selby (1830). *Ill. Orn.* **2**(6): 93 [Cichlocolaptes leucophorus].

Junge (1958). *Ardea* **46**: 88 [Pitta erythrogaster bernsteini].

King, B.F. (1978). *Bull. Brit. Orn. Club* **98**(3): 110-111 [Pitta oatesi deborah].

King, P.P. (1831). *Proc. Zool. Soc. London 1830-1831*: 15 [Pteroptochos tarmi], 30 [Asthenes anthoides, Pygarrhichus albigularis].

Kittlitz (1830). *Mém. Acad. Imp. Sci. St. Pétersb.* **1**: 178 [Pteroptochos], 179 [Scelorchilus rubecula], 180 [Scelorchilus albicollis], 182 [Pteroptochos megapodius], 184 [Eugralla paradoxa], 185 [Asthenes humicola], 187 [Leptasthenura aegithaloides].

Kittlitz (1835). *Mém. Acad. Imp. Sci. St. Pétersb.* **2**: 468 [Geositta cunicularia fissirostris].

Koepeke (1957). *Publ. Mus. Hist. Nat. Javier Prado (Ser. A. Zool.)* **18**: 2 [Synallaxis zimmeri].

Koepeke (1959). *Beitr. Neotrop. Fauna* **1**: 243-248 [Asthenes cactorum].

Koepeke (1961). *Amer. Mus. Novit.* **2028**: 13 [Asthenes pudibunda grisior].

Koepeke (1961). *Publ. Mus. Hist. Nat. Javier Prado (Ser. A. Zool.)* **20**: 9 [Cranioleuca baroni zaratensis].

Koepeke (1965). *Beitr. Neotrop. Fauna* **4**(3): 154 [Geositta cunicularia georgei], 158 [Leptasthenura pileata latistriata].

Krabbe (1992). *Bull. Brit. Orn. Club* **112**(3): 166-167 [Geositta tenuirostris kalimayae].

Krabbe & Schulenberg (1997). *Orn. Monogr.* **48**: 75-76 [Scytalopus chocoensis], 78 [Scytalopus robbinsi], 81 [Scytalopus parkeri].

Krabbe, Agro, Rice, Jacome, Navarrete & Sornoza (1999). *Auk* **116**(4): 883-884 [Grallaria ridgelyi].

Krabbe, Isler, Isler, Whitney, Álvarez & Greenfield (1999). *Wilson Bull.* **111**(2): 158-160 [Myrmotherula fieldsae].

Kratter (1997). *Orn. Neotropical* **8**(1): 23-24 [Sclerurus albigularis kemppi].

La Touche (1921). *Bull. Brit. Orn. Club* **42**: 14 [Serilophus lunatus elisabethae].

Lafrsnaye (1832). *Mag. Zool.* **2**: pl. 7 [Syndactyla rufosuperciliata].

Lafrsnaye (1836). *Mag. Zool.* **6**: 7 [Geositta tenuirostris].

Lafrsnaye (1839). *Rev. Zool.*: 100 [Lepidocolaptes affinis].

Lafrsnaye (1840). *Rev. Zool.*: 103 [Scytalopus griseicollis, Myornis senilis], 104 [Pseudocolaptes boissoneauitii].

Lafrsnaye (1842). *Dict. Univ. Hist. Nat.* **1**: 411 [Anabazennops], 412 [Anabacerthia, Anabacerthia striaticollis].

Lafrsnaye (1842). *Rev. Zool.*: 134 [Xiphorhynchus triangularis], 333 [Grallaria varia imperator, Grallaria ruficapilla], 334 [Grallaricula nana].

Lafrsnaye (1843). *Rev. Zool.*: 99 [Grallaria rufula], 131 [Acropternis orthonyx], 290 [Schizoeaca fuliginosa, Synallaxis unirufa, Synallaxis brachyura, Siptornis striaticollis], 291 [Synallaxis cinnamomea], 390 [Hellmayrea gularis].

Lafrsnaye (1844). *Rev. Zool.*: 80 [Hylexetastes perrotii], 82 [Thamnophilus doliatus albicans, Thamnophilus multistriatus].

Lafrsnaye (1845). *Rev. Zool.*: 340 [Myrmeciza immaculata].

Lafrsnaye (1846). *Rev. Zool.*: 208 [Lepidocolaptes albolineatus].

Lafrsnaye (1847). *Rev. Zool.*: 69 [Hylophylax naevioides], 75 [Geositta peruviana], 76 [Xiphorhynchus picus picirostris].

Lafrsnaye (1850). *Rev. et Mag. Zool. Ser. 2, no. 2*: 102 [Dendrexetastes rufigula devillei], 107 [Biatas nigripetis], 277 [Lepidocolaptes souleyetii lineaticeps], 376 [Campylorhamphus procurvoides], 387 [Xiphorhynchus guttatus guttatoides], 420 [Xiphorhynchus guttatus dorbignyanus], 590 [Sittasomus griseicapillus sylvioides, Sittasomus griseicapillus amazonus].

Lafrsnaye (1851). *Rev. et Mag. Zool. Ser. 2, no. 3*: 328 [Dendrocicla tyrannina], 467 [Dendrocicla fuliginosa meruloides].

Lafrsnaye (1852). *Rev. et Mag. Zool. Ser. 2, no. 4*: 466 [Dendrocolaptes sanctithomae].

Lafrsnaye (1853). *Rev. et Mag. Zool. Ser. 2, no. 5*: 339 [Thamnophilus tenuipunctatus].

Landbeck (1880). *Archiv Naturgeschichte* **46**(1): 274 [Geositta antarctica].

Lanyon, Stotz & Willard (1990). *Wilson Bull.* **102**(4): 571-573 [Clyctantates atrogularis].

Laubmann (1930). *Wiss. Ergebn. Deutschen Gran Chaco Exped. Vögel*: 198 [Campylorhamphus trochilirostris hellmayri].

Lawrence (1860). *Ann. Lyceum Nat. Hist. New York* **7**: 285 [Phaenostictus mcleamani].

Lawrence (1861). *Ann. Lyceum Nat. Hist. New York* **7**: 303 [Hylopezus perspicillatus].

Lawrence (1862). *Ann. Lyceum Nat. Hist. New York* **7**: 465 [Automolus ochrolaemus pallidigularis], 467 [Xiphorhynchus lachrymosus], 468 [Myrmotherula fulviventris].

Lawrence (1863). *Ann. Lyceum Nat. Hist. New York* **8**: 6 [Gymnophis leucaspis bicolor].

Lawrence (1863). *Ibis*: 181 [Xiphorhynchus susurrans namus], 182 [Microrhynchus quivensis virgatus].

Lawrence (1865). *Ann. Lyceum Nat. Hist. New York* **8**: 127 [Syndactyla subalaris lineata, Thripadectes rufobrunneus], 128 [Margarornis rubiginosus], 130 [Premnoplex brunescens brunneicauda, Dysithamnus striaticeps], 131 [Myrmotherula axillaris albigula], 172 [Myrmotherula schisticolor], 180 [Synallaxis brachyura nigrofumosa].

Lawrence (1865). *Proc. Acad. Nat. Sci. Philadelphia*: 107 [Thamnophilus doliatus nigricristatus].

Lawrence (1866). *Ann. Lyceum Nat. Hist. New York* **8**: 345 [Grallaria gigantea], 346 [Grallaricula flavirostris costaricensis].

Lawrence (1867). *Ann. Lyceum Nat. Hist. New York* **8**: 468 [Thamnophilus tenuipunctatus tenuifasciatus, Hyloctistes subulatus virgatus], 469 [Thamnophilus doliatus nigrescens], 481 [Xiphorhynchus flavigaster mentalis].

Lawrence (1868). *Ann. Lyceum Nat. Hist. New York* **9**: 105 [Cranioleuca erythroops rufigenis].

Lawrence (1874). *Ann. Lyceum Nat. Hist. New York* **10**: 186 [Synallaxis stictothorax maculata], 398 [Thripadectes virgaticeps].

Lawrence (1882). *Ann. New York Acad. Sci.* **2**: 288 [Formicarius moniliger pallidus].

Leach (1814). *Zool. Misc.* **1**: 20 [Cymbilaimus lineatus].

Léotaud (1866). *Ois. Ile Trinidad*: 166 [Xiphorhynchus picus altirostris].

Lesson (1828). *Man. d'Orn.* **1**: 177 [Corydon], 2: 17 [Cinclodes patagonicus chilensis].

Lesson (1830). *Traité d'Orn. livr.* **4**: 311 [Nasica], 314 [Xiphorhynchus spixii, Lepidocolaptes angustirostris coronatus], **livr.** **5**: 347 [Batará], 375 [Tarabá], 376 [Thamnophilus pallatus vestitus], 397 [Merulaxis, Merulaxis ater].

Lesson (1839). *Rev. Zool.*: 105 [Asthenes pyrrholeuca sordida].

Lesson (1840). *Rev. Zool.*: 226 [Thamnophilus doliatus capistratus], 269 [Xiphocolaptes], 270 [Xiphocolaptes promeropirhynchus].

Lesson (1842). *Actes Soc. Linn. Bordeaux* **12**(41): 197 [Eugralla].

Lesson (1844). *Écho du Monde Savant* **11**: col. 182 [Certhiasia], col. 275 [Margarornis squamiger perlatus], col. 276 [Dendrexetastes rufigula], col. 303 [Melanopareia elegans], col. 348 [Sakesphorus bernardi], col. 848 [Grallaria quitenis].

Lesson (1844). *Rev. Zool.*: 433 [Furnarius leucopus cinnamomeus].



## Lichtenstein / Pinto

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Ridgway (1889). *Proc. US Natl. Mus.* 11: 541 [Xiphocolaptes promeropirhynchus costaricensis], 542 [Sclerurus albigularis canigularis], 544 [Xiphorhynchus erythropygus punctigula].

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Salvin (1885). *Ibis*: 424 [Herpsilochmus sticturus], 427 [Percnostola leucostigma saturata].

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Salvin & Godman (1882). *Ibis*: 79 [Chamaeza campanisona fulvescens].

Salvin & Godman (1883). *Ibis*: 210 [Xiphorhynchus guttatus polystictus], 211 [Dysithamnus mentalis spodiocotus].

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Sclater, P.L. (1857). *Proc. Zool. Soc. London* 1856: 288 [Automolus rubiginosus, Automolus ochrolaemus cervinigris], 289 [Anabacerthia variegaticeps, Xenops minutus mexicanus], 290 [Sclerurus mexicanus], 294 [Formicarius moniliger], 1857: 17 [Sclerurus caudatus brunneus], 47 [Myrmoborus myotherinus elegans, Conopophaga castaneiceps], 48 [Myrmotherula haematotona, Myrmeciza hemimelaena], 129 [Grallaricula loricata, Grallaricula ferruginipunctus], 130 [Myrmotherula axillaris melaena, Myrmotherula urosticta, Hypocnemoides melanopogon], 131 [Myrmotherula hauxwelli, Cercomacra cinerascens], 132 [Herpsilochmus pectoralis], 133 [Sakesphorus melanothorax].

Sclater, P.L. (1858). *Proc. Zool. Soc. London* 1857: 272 [Syndactyla guttulata], 273 [Asthenes flammulata multistriata], 1858: 61 [Automolus melanopzeus], 62 [Synallaxis moesta brunneicaudalis], 63 [Synallaxis albigularis], 65 [Thamnopphilus aethiops], 65, 214 [Thamnopphilus schistaceus capitalis], 66 [Cercomacra serva], 66, 223 [Dysithamnus leucostictus], 68 [Hylopezus fulviventeris, Grallaricula flavirostris], 69 [Scytalopus micropterus], 214 [Thamnopphilus amazonicus], 220 [Pygipitla], 234 [Myrmotherula, Myrmotherula multistriata], 244 [Cercomacra], 245 [Cercomacra nigricans], 252 [Percnostola schistacea], 274 [Gymnocichla], 283 [Grallaricula], 300 [Microrhopias quixensis boucardi].

Sclater, P.L. (1859). *Proc. Zool. Soc. London* 1858: 457 [Cranioleuca antiensis], 540 [Myrmeciza exsul], 1859: 54 [Dendrocicla anabatina], 141 [Anabacerthia variegaticeps temporalis, Syndactyla subalaris, Thamnopphilus unicolor], 191 [Synallaxis scutata, Synallaxis stictothorax].

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Sclater, P.L. (1877). *Ibis*: 442 [Grallaria haplontia], 445 [Grallaria flavotineta].

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Sclater, P.L. (1889). *Proc. Zool. Soc. London* 1889: 33 [Thripophaga fusciceps, Automolus infuscatus cervicalis], 34 [Hylexetastes].

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Sclater, P.L. & Salvin (1859). *Ibis*: 118 [Xiphocolaptes promeropirhynchus emigrans].

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Sclater, P.L. & Salvin (1866). *Proc. Zool. Soc. London* 1866: 183 [Furnarius torridus], 184 [Cranioleuca vulpecula], 186 [Myrmoborus melanurus, Myrmochanes hemileucus], 190 [Metopothrix, Metopothrix aurantiacus].

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- Seiler (1913). *Verh. Orn. Ges. Bayern* **11**: 277 [Thamnophilus aethiops kapouii].
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- Sharpe (1876). *Nature* **14**: 297 [Pitta steerii, Sarcophanops steerii].
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- Sharpe (1888). *Proc. Zool. Soc. London* **1887**: 558 [Calyptomena whiteheadi].
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- Shaw (1809). *Gen. Zool.* **7(2)**: 327 [Thamnophilus punctatus].
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- Siek (1950). *Orn. Ber. Darmst.* **3**: 23 [Dendrocicla fuliginosa trumaii].
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- Siek (1960). *J. Orn.* **101**: 155 [Merulaxis stresemanni].
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- Smith, A. (1839). *Illus. Zool. South Africa, Aves*: 27 [Smithornis capensis].
- Snethlage (1906). *Orn. Monatsber.* **14**: 9 [Myrmotherula hauxwelli hellmayri].
- Snethlage (1907). *Orn. Monatsber.* **15**: 161 [Thamnophilus nigrocinerus huberi, Campylorhamphus procuviroides multistriatus], 162 [Rhegmatiorhina berlepschi].
- Snethlage (1908). *Bol. Mus. Goeldi* **5**: 59 [Rhegmatiorhina melanosticta purusiana].
- Snethlage (1908). *J. Orn.* **56**: 15 [Xiphocolaptes promeropirhynchus berlepschi], 17 [Myrmeciza goeldii].
- Snethlage (1910). *Orn. Monatsber.* **18**: 192 [Hylopezus macularius paraensis].
- Snethlage (1912). *Orn. Monatsber.* **20**: 153 [Myrmotherula sclateri].
- Snethlage (1914). *Orn. Monatsber.* **22**: 39 [Conopophaga aurita pallida], 40 [Thamnomanes ardesiacus obidensis], 41 [Myrmotherula iheringi], 42 [Hylophylax poecilnotus nigrigula].
- Snethlage (1924). *J. Orn.* **72**: 446 [Sclerurus scansor caenensis].
- Snethlage (1925). *J. Orn.* **73**: 269 [Hylexetastes stresemanni], 273 [Terenura spodiopitila meridionalis].
- Snethlage (1927). *Orn. Monatsber.* **35**: 8 [Xiphocolaptes falcirostris franciscanus].
- Snethlage (1928). *Bol. Mus. Nac. Rio J.* **4(2)**: 6 [Cercomacra nigrescens ochrogyna, Cercomacra ferdinandi].
- Snethlage (1928). *J. Orn.* **76**: 585 [Thamnophilus caeruleus ochraceiventris].
- van Someren (1919). *Bull. Brit. Orn. Club* **40**: 24 [Smithornis capensis meinerzhageni].
- van Someren (1921). *Bull. Brit. Orn. Club* **41**: 103 [Smithornis rufolateralis budongoensis].
- Sparmann (1788). *Mus. Carolinianum* **68**: pl. 68 [Xenops minutus].
- Spix (1824). *Av. Bras* **1**: 72 [Formicarius colma ruficeps, Pyriglena leuconota], 73 [Philydor], 76 [Furnarius rufus albulgaris], 82 [Hylexetastes subulatus], 83 [Pseudoeisura crista], 86 [Xiphocolaptes falcirostris], 87 [Dendrocolaptes platyrostris], 88 [Xiphorhynchus ocellatus, Lepidocolaptes squamatus wagleri].
- Spix (1825). *Av. Bras* **2**: 26 [Ancistrops strigilatus], 27 [Pygipitla stellaris], 28 [Myrmeciza melanocephus], 29 [Hypoenemus cantator striata], 30 [Myrmotherula galis, Myrmoborus myotherinus].
- Statius Muller (1776). *Natursyst.* (Suppl.) **1776**: 141 [Myrmeciza ferruginea], 143 [Pitta sordida, Philepitta castanea], 144 [Pitta moluccensis], 146 [Pitta guajana].
- Steere (1890). *List Birds Mammals Steere Exped.*: 23 [Sarcophanops samarensis].
- Steulle & Deautier (1950). *Hornero* **9**: 176 [Dendrocolaptes picumnus casarezi].
- Stiles (1992). *Wilson Bull.* **104(3)**: 391 [Grallaria kaestneri].
- Stolzmann (1926). *Ann. Zool. Mus. Polon. Hist. Nat.* **5**: 216 [Chamaeza campanisona parvianalis], 218 [Geositta peruviana rostrata], 219 [Hellmayrea], 222 [Campylorhamphus trochiliformis zarumillanus].
- Stolzmann & Domaniowski (1918). *Compt. Rend. Soc. Sci. Varsovie* **11**: 179, 184 [Pyriglena leuconota hellmayri], 180, 185 [Pyriglena leuconota marcapatensis].
- Stresemann (1937). *Orn. Monatsber.* **45**: 76 [Scytalopus spillmanni].
- Such (1825). *Zool. J.* **1**: 558 [Muckenziaena leachi].
- Swainson (1824). *Zool. J.* **1**: 301 [Formicivora], 302 [Drymophila].
- Swainson (1825). *Zool. J.* **1**: 468 [Pitta versicolor], 2: 89 [Thamnophilus torquatus], 91 [Thamnophilus ambiguus], 152 [Myrmeciza longipes], 153 [Pyriglena atra].
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PITTIDAE (Pittas)  
FURNARIIDAE (Ovenbirds)  
DENDROCOLAPTIDAE (Woodcreepers)  
THAMNOPHILIDAE (Typical Antbirds)  
FORMICARIIDAE (Ground-antbirds)  
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